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DECOMMISSIONING COST ANALYSIS

for the

VERMONT YANKEE NUCLEAR POWER STATION

prepared for

ENTERGY NUCLEAR VERMONT YANKEE

prepared by

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REVISION LOG

No.	Date	Item Revised	Reason for Revision
0	01-09-2012		Original Issue
1	02-02-2012	DECON scenarios results on p. xviii, Tables 3.3 and 3.4, Table 5.1 and 6.1, and Appendix D: Tables D-1 and D-2	Eliminate duplication of spent fuel rack disposition activity
		Text on pp. xiv and 1-5	Update information on Blue Ribbon Commission findings

EXECUTIVE SUMMARY

The Memorandum of Understanding[1] (MOU) entered into at the time of the acquisition of the Vermont Yankee Nuclear Power Station (Vermont Yankee) requires that Entergy Nuclear Vermont Yankee (Entergy VY) "update the site-specific decommissioning cost study at least once every 5 years." The previous Vermont Yankee decommissioning cost analysis was prepared in 2006 and summarized in a report dated January 2007.[2] The analysis described in this document identifies the process and basic assumptions used to update the previous (2006) costs for decommissioning (decontaminating and dismantling) Vermont Yankee to current year (2011) dollars.

In addition to fulfilling the requirement of the MOU, this cost analysis provides Entergy VY with the information to assess its current decommissioning liability as it relates to Vermont Yankee. The costs are based on several key assumptions in areas of regulation, component characterization, high-level radioactive waste management, low-level radioactive waste disposal, performance uncertainties (contingency) and site restoration requirements.

The analysis is not a detailed engineering evaluation, but an estimate prepared in advance of the detailed engineering required to carry out the decommissioning of the nuclear unit. It may also not reflect the actual plan to decommission Vermont Yankee; the plan may differ from the assumptions made in this analysis based on facts that exist at the time of decommissioning.

To generate the estimates, TLG relied upon the site-specific, technical database used in the 2006 analysis. The database was reviewed and revised, as necessary, to reflect current site conditions and expectations during decommissioning. Entergy VY provided the economic information used to update the cost model.

The costs to decommission Vermont Yankee for the scenarios evaluated are tabulated at the end of this section. Costs are reported in 2011 dollars and include monies anticipated to be spent for radiological remediation and operating license termination, spent fuel storage, and site restoration activities.

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1 Memorandum of Understanding Among Entergy Nuclear Vermont Yankee, LLC, Vermont Yankee Nuclear Power Corporation, Central Vermont Public Service Corporation, Green Mountain Power Corporation, and the Vermont Department of Public Service, Docket No. 6545, March 6, 2002

2 "Decommissioning Cost Analysis for the Vermont Yankee Nuclear Power Station," TLG Document No. E11-1559-002, Rev. 0, January 2007

A complete discussion of the assumptions relied upon in this analysis is provided in Section 3, along with schedules of annual expenditures for each scenario. A sequence of significant project activities is provided in Section 4 with a timeline for each scenario. Detailed cost reports used to generate the summary tables contained within this document are provided in Appendices C, D and E.

Consistent with the 2006 analysis, the current cost analysis assumes that the shutdown of the nuclear unit is a scheduled and pre-planned event (e.g., there is no delay in transitioning the plant and workforce from operations or in obtaining regulatory relief from operating requirements, etc.). The estimates include the continued operation of the reactor building as an interim wet fuel storage facility for approximately five and one-half years after operations cease. During this time period, it is assumed that the spent fuel residing in the pool will be transferred to an independent spent fuel storage installation (ISFSI) on the site. The ISFSI will remain operational until the Department of Energy (DOE) is able to complete the transfer of the fuel to a federal facility (e.g., a monitored retrievable storage facility).[3]

Alternatives and Regulations

The Nuclear Regulatory Commission (NRC) provided general decommissioning guidance in a rule adopted on June 27, 1988.[4] In this rule, the NRC set forth technical and financial criteria for decommissioning licensed nuclear facilities. The regulations addressed planning needs, timing, funding methods, and environmental review requirements for decommissioning. The rule also defined three decommissioning alternatives as being acceptable to the NRC: DECON, SAFSTOR, and ENTOMB.

> DECON is defined as "the alternative in which the equipment, structures, and portions of a facility and site containing radioactive contaminants are removed or decontaminated to a level that permits the property to be released for unrestricted use shortly after cessation of operations."[5]

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3 Projected expenditures for spent fuel management identified in the cost analyses do not consider the outcome of the litigation (including compensation for damages) with the DOE with regard to the delays incurred by Entergy VY in the timely removal of spent fuel from the site. As such, this analysis takes no credit for collection of damages, even though utilities are now routinely being awarded such damages in the courts. Collection of spent fuel damages from the DOE is expected to provide the majority of funds needed for spent fuel management following shutdown.

4 U.S. Code of Federal Regulations, Title 10, Parts 30, 40, 50, 51, 70 and 72 "General Requirements for Decommissioning Nuclear Facilities," Nuclear Regulatory Commission, Federal Register Volume 53, Number 123 (p 24018 et seq.), June 27, 1988

5 Ibid. Page FR24022, Column 3

SAFSTOR is defined as "the alternative in which the nuclear facility is placed and maintained in a condition that allows the nuclear facility to be safely stored and subsequently decontaminated (deferred decontamination) to levels that permit release for unrestricted use."[6] Decommissioning is required to be completed within 60 years, although longer time periods will be considered when necessary to protect public health and safety.

ENTOMB is defined as "the alternative in which radioactive contaminants are encased in a structurally long-lived material, such as concrete; the entombed structure is appropriately maintained and continued surveillance is carried out until the radioactive material decays to a level permitting unrestricted release of the property."[7] As with the SAFSTOR alternative, decommissioning is currently required to be completed within 60 years, although longer time periods will also be considered when necessary to protect public health and safety.

The 60-year restriction has limited the practicality for the ENTOMB alternative at commercial reactors that generate significant amounts of long-lived radioactive material. In 1997, the Commission directed its staff to re-evaluate this alternative and identify the technical requirements and regulatory actions that would be necessary for entombment to become a viable option. The resulting evaluation provided several recommendations, however, rulemaking has been deferred pending the completion of additional research studies (e.g., on engineered barriers).

In 1996, the NRC published revisions to its general requirements for decommissioning nuclear power plants to clarify ambiguities and codify procedures and terminology as a means of enhancing efficiency and uniformity in the decommissioning process.[8] The amendments allow for greater public participation and better define the transition process from operations to decommissioning. Regulatory Guide 1.184, issued in July 2000, further described the methods and procedures that are acceptable to the NRC staff for implementing the requirements of the 1996 revised rule that relate to the initial activities and the major phases of the decommissioning process. The costs and schedules presented in this analysis follow the general guidance and sequence in

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6 Ibid.

7 Ibid. Page FR24023, Column 2

8 U.S. Code of Federal Regulations, Title 10, Parts 2, 50, and 51, "Decommissioning of Nuclear Power Reactors," Nuclear Regulatory Commission, Federal Register Volume 61, (p 39278 et seq.), July 29, 1996

the amended regulations. The format and content of the estimates is also consistent with the recommendations of Regulatory Guide 1.202, issued February 2005. [9]

Methodology

The methodology used to develop the estimates follows the basic approach originally presented in the cost estimating guidelines[10] developed by the Atomic Industrial Forum (now Nuclear Energy Institute). This reference describes a unit cost factor method for estimating decommissioning activity costs. The unit cost factors used in this analysis incorporate site-specific costs and the latest available information about worker productivity in decommissioning.

An activity duration critical path is used to determine the total decommissioning program schedule. This is required for calculating the carrying costs, which include program management, administration, field engineering, equipment rental, quality assurance, and security. This systematic approach for assembling decommissioning estimates ensures a high degree of confidence in the reliability of the resulting costs.

The estimates also reflect lessons learned from previously completed decommissioning projects, including TLG's involvement in the Shippingport Station decommissioning, completed in 1989, and the decommissioning of the Cintichem reactor, hot cells and associated facilities, completed in 1997. In addition, industry experience in the recent decommissioning of the reactors at Pathfinder, Shoreham, Rancho Seco, Trojan, Yankee Rowe, Big Rock Point, Maine Yankee, Humboldt Bay-3, Connecticut Yankee and San Onofre-1 was reviewed and considered in establishing the decommissioning process used as a basis for the Vermont Yankee estimate.

Decommissioning Scenarios

The plant entered commercial operation in 1972 with a license to operate 40 years. In January 2006, Entergy VY and Entergy Nuclear Operations, Inc. submitted an application to the NRC for renewal of the facility operating license (DPR-28) for a period of an additional 20 years. In March 2011, the NRC approved the request to extend the facility operating license from midnight March 21, 2012, to midnight March 21, 2032. This analysis evaluates decommissioning options for both the original license expiration date and the extended date.

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9 "Standard Format and Content of Decommissioning Cost Estimates for Nuclear Power Reactors," Regulatory Guide 1.202, Nuclear Regulatory Commission, February 2005

10 T.S. LaGuardia et al., "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates," AIF/NESP-036, May 1986

Six scenarios were identified for evaluation. As shown below, the six scenarios evaluate a combination of shutdown dates, decommissioning alternative (prompt or deferred), and expectations of the DOE's performance in transferring spent fuel from the site (Entergy VY vs. Vermont Department of Public Service).

Scenario	Shutdown	Option	1st Spent Fuel Assembly Pickup	Last Spent Fuel Assembly Pickup
1	2012	SAFSTOR	2021	2045
2	2012	SAFSTOR	2058	2082
3	2032	DECON	2021	2060
4	2032	DECON	2042	2082
5	2032	SAFSTOR	2021	2060
6	2032	SAFSTOR	2042	2082

Contingency

Consistent with standard cost estimating practices, contingencies are applied to the decontamination and dismantling costs developed as a "specific provision for unforeseeable elements of cost within the defined project scope, particularly important where previous experience relating estimates and actual costs has shown that unforeseeable events which will increase costs are likely to occur."[11] The cost elements in the estimates are based on ideal conditions; therefore, the types of unforeseeable events that are almost certain to occur in decommissioning, based on industry experience, are addressed through a percentage contingency applied on a line-item basis. This contingency factor is a nearly universal element in all large-scale construction and demolition projects. It should be noted that contingency, as used in this analysis, does not account for price escalation and inflation in the cost of decommissioning over the remaining operating life of the nuclear unit.

The use and role of contingency within decommissioning estimates is not a safety factor issue. Safety factors provide additional security and address situations that may never occur. Contingency funds, by contrast, are expected to be fully expended throughout the program. Inclusion of contingency is necessary to provide assurance that sufficient funding is available to accomplish the intended tasks.

[11] Project and Cost Engineers' Handbook, Second Edition, American Association of Cost Engineers, Marcel Dekker, Inc., New York, New York, p. 239.

Low-Level Radioactive Waste Disposal

The contaminated and activated material generated in the decontamination and dismantling of a commercial nuclear reactor is generally classified as low-level radioactive waste, although not all of the material is suitable for shallow-land disposal. With the passage of the "Low-Level Radioactive Waste Disposal Act" in 1980 and its Amendments of 1985,[12] the states became ultimately responsible for the disposition of low-level radioactive waste generated within their own borders.

Vermont, along with Maine, joined with Texas to form a compact for the disposal of low-level radioactive waste generated by the three states, with Texas as the host state. The Maine Legislature subsequently voted to exit the Texas compact (effective April 5, 2002) following the shutdown and decommissioning of its only commercial nuclear unit (Maine Yankee). Vermont remains a member of the compact.

The Texas Commission on Environmental Quality (TCEQ), the environmental agency for the state, is responsible for the licensing of any low-level radioactive waste disposal facility in Texas. In 2004, the agency received an application from Waste Control Specialists (WCS) for authorization to construct and operate a low-level radioactive disposal site in Andrews County. The agency granted WCS a disposal license in 2009 and approval to commence construction in early 2011. Construction of the disposal facility is now essentially complete and the facility was declared operational in November 2011.

A significant portion of the radioactive waste generated during decommissioning is only slightly contaminated and, as such, can be shipped to licensed commercial waste conditioning/recovery facilities. Volume reduction is accomplished through a variety of methods including surveying (for non-verified clean material), incineration, compaction and metal-melt. Costs for waste processing/reduction were based upon existing agreements with Entergy VY and/or Entergy vendors.

The TCEQ has only published interim disposal rates for the WCS facility in advance of a formal disposal rate-setting process. As such, for this analysis, disposition of the various waste streams produced by the decommissioning process considered all options and services currently available to Entergy VY. The majority of the low-level radioactive waste designated for direct disposal (Class A [13]) can be sent to Energy*Solutions'* facility in Clive, Utah. Therefore, disposal costs for Class A waste were based upon Entergy's *Life of Plant Agreement* with Energy*Solutions*.

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12 "Low-Level Radioactive Waste Policy Amendments Act of 1985," Public Law 99-240, January 15, 1986

13 Waste is classified in accordance with U.S. Code of Federal Regulations, Title 10, Part 61.55

This facility is not licensed to receive the higher activity portion (Classes B and C) of the waste stream. Disposal costs for the Class B and C waste were based upon the interim rates for the WCS facility.

The disposition of the various types of radioactive and non-radioactive waste generated in the decommissioning of Vermont Yankee and their assumed destination are discussed in more detail in Sections 3 and 5.

High-Level Waste

Congress passed the "Nuclear Waste Policy Act" (NWPA) in 1982, assigning the federal government's long-standing responsibility for disposal of the spent nuclear fuel created by the commercial nuclear generating plants to the DOE. The DOE was to begin accepting spent fuel by January 31, 1998; however, to date no progress in the removal of spent fuel from commercial generating sites has been made.

Completion of the decommissioning process is dependent upon the DOE's ability to remove spent fuel from the site in a timely manner. DOE's repository program assumes that spent fuel allocations will be accepted for disposal from the nation's commercial nuclear plants, with limited exceptions, in the order (the "queue") in which it was discharged from the reactor.[14] Entergy's current spent fuel management plan for the Vermont Yankee spent fuel is based in general upon: 1) a 2020 start date for DOE initiating transfer of commercial spent fuel to a federal facility (not necessarily a final repository), and 2) expectations for spent fuel receipt by the DOE for the Vermont Yankee fuel. The DOE's generator allocation/receipt schedules are based upon the oldest fuel receiving the highest priority. Assuming a maximum rate of transfer of 3,000 metric tons of uranium (MTU)/year,[15] the spent fuel is completely removed from the site in 2045 for a 2012 shutdown (Scenario 1) and in 2060 for a 2032 shutdown (Scenarios 3 and 5). The latest fuel removal completion date, as proposed by the Vermont Department of Public Service, would be 2082[16] (Scenarios 2, 4 and 6).

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14 In 2008, the DOE issued a report to Congress in which it concluded that it did not have authority, under present law, to accept spent nuclear fuel for interim storage from decommissioned commercial nuclear power reactor sites. However, the Blue Ribbon Commission, in its draft report, noted that: "[A]ccepting spent fuel according to the OFF [Oldest Fuel First] priority ranking instead of giving priority to shutdown reactor sites could greatly reduce the cost savings that could be achieved through consolidated storage if priority could be given to accepting spent fuel from shutdown reactor sites before accepting fuel from still-operating plants. …. The magnitude of the cost savings that could be achieved by giving priority to shutdown sites appears to be large enough (i.e., in the billions of dollars) to warrant DOE exercising its right under the Standard Contract to move this fuel first."

15 "Acceptance Priority Ranking & Annual Capacity Report," DOE/RW-0567, July 2004

16 State of Vermont Public Service Board Order, Docket 7082, April 2006

The assumed 2020 DOE start date is nominally based on the last position stated by the DOE. On July 15, 2008, the then-Director of the DOE's Office of Civilian Radioactive Waste Management testified before Congress that DOE "could be ready to begin accepting spent nuclear fuel by 2020." His statement was based on continued program funding.

Today, the country is at an impasse on high-level waste disposal. The current administration has cut the budget for the geological repository program while promising to "conduct a comprehensive review of policies for managing the back end of the nuclear fuel cycle … and make recommendations for a new plan."[17] Towards this goal, the administration appointed a Blue Ribbon Commission on America's Nuclear Future (Blue Ribbon Commission) to make recommendations for a new plan for nuclear waste disposal. The Blue Ribbon Commission's charter includes a requirement that it consider "[o]ptions for safe storage of used nuclear fuel while final disposition pathways are selected and deployed."[18]

On January 26, 2012, the Blue Ribbon Commission issued its "Report to the Secretary of Energy" containing a number of recommendations on nuclear waste disposal. Two of the recommendations that may impact decommissioning planning are:

- "[T]he United States [should] establish a program that leads to the timely development of one or more consolidated storage facilities."[19]
- "[T]he United States should undertake an integrated nuclear waste management program that leads to the timely development of one or more permanent deep geological facilities for the safe disposal of spent fuel and high-level nuclear waste."[20]

Entergy believes that one or more monitored retrievable storage facilities could be put into place, with the Blue Ribbon Commission recommendation for the same, within a reasonable time. For example, a facility such as that licensed by the NRC to Private Fuel Storage could be used by the DOE to store fuel until a final disposition is determined.

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17 Charter of the Blue Ribbon Commission on America's Nuclear Future, "Objectives and Scope of Activities," http://www.brc.gov/index.php?q=page/charter

18 Ibid.

19 "Blue Ribbon Commission on America's Nuclear Future, Report to the Secretary of Energy," http://www.brc.gov/, p. 32, January 2012

20 Ibid., p.27

The Public Service Board of the State of Vermont ordered (in Docket 7082) that Entergy's spent fuel management plan should consider long-term storage of the spent nuclear fuel on-site if the federal Department of Energy does not remove the fuel under its current schedule, at a minimum, through 2082. As such, the three base scenarios (Scenarios 1, 3 and 5) are also evaluated for the extended spent fuel management interval (Scenarios 2, 4 and 6).

The NRC requires that licensees establish a program to manage and provide funding for the caretaking of all irradiated fuel at the reactor site until title of the fuel is transferred to the DOE.[21] Interim storage of the fuel, until the DOE has completed the transfer, will be in the reactor building storage pool as well as at an on-site ISFSI(s).

The analysis assumes that a second ISFSI is constructed at the site to accommodate all of the spent fuel generated from reactor operations. Once the reactor building's storage pool is emptied, the building can be either decontaminated and dismantled or prepared for long-term storage. The second ISFSI will operate under an amended Part 50 license once the plant's operating license is terminated.

Site Restoration

The efficient removal of the contaminated materials at the site may result in damage to many of the site structures. Blasting, coring, drilling, and the other decontamination activities can substantially damage power block structures, potentially weakening the footings and structural supports. It is unreasonable to anticipate that these structures would be repaired and preserved after the radiological contamination is removed. The cost to dismantle site structures with a work force already mobilized is more efficient and less costly than if the process is deferred.

Consequently, this study assumes that the site structures addressed by this analysis are removed to a nominal depth of three feet below the local grade level wherever possible. The rubble produced in the demolition and dismantling of the structures is processed to remove the steel rebar and then shipped off-site for further processing (e.g., to recover the aggregate) and/or conventional disposal. Clean fill is brought in to backfill the below grade voids (i.e., the demolition debris, including clean concrete, was not used on-site as was assumed in the 2006 analysis). The site can then be graded and stabilized.

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[21] U.S. Code of Federal Regulations, Title 10, Part 50 – Domestic Licensing of Production and Utilization Facilities, Subpart 54 (bb), "Conditions of Licenses"

Summary

The cost to decommission Vermont Yankee is evaluated for multiple scenarios. Regardless of the timing of the decommissioning activities, the estimates assume the eventual removal of the contaminated and activated plant components and structural materials, such that the facility operator may then have unrestricted use of the site with no further requirement for an operating license. Decommissioning is accomplished within the 60-year period required by current NRC regulations. In the interim, the spent fuel remains in storage at the site until such time that the transfer to a DOE facility is complete. Once emptied, the storage facilities are also decommissioned.

The alternatives evaluated in this analysis are described in Section 2. The assumptions are presented in Section 3, along with schedules of annual expenditures. The major cost contributors are identified in Section 6, with detailed activity costs, waste volumes, and associated manpower requirements delineated in Appendices C, D and E. The major cost components are also identified in the cost summaries provided at the end of this section.

The cost elements in the estimates for the DECON and SAFSTOR alternatives are assigned to one of three subcategories: NRC License Termination (radiological remediation), Spent Fuel Management, and Site Restoration. The subcategory "NRC License Termination" is used to accumulate costs that are consistent with "decommissioning" as defined by the NRC in its financial assurance regulations (i.e., 10 CFR §50.75). In situations where the long-term management of spent fuel is not an issue, the cost reported for this subcategory is generally sufficient to terminate the unit's operating license.

The "Spent Fuel Management" subcategory contains costs associated with the construction of a second ISFSI, containerization and transfer of spent fuel to the ISFSI(s), and the operation of the ISFSI(s) until such time that the transfer of all fuel from this facility to an off-site location is complete. It does not include any spent fuel management expenses incurred prior to the cessation of plant operations, nor does it include any costs related to the final disposal of the spent fuel.

"Site Restoration" is used to capture costs associated with the dismantling and demolition of buildings and facilities demonstrated to be free from contamination. This includes structures never exposed to radioactive materials, as well as those facilities that have been decontaminated to appropriate levels. Structures are removed to a depth of three feet and backfilled to conform to local grade.

It should be noted that the costs assigned to these subcategories are allocations. Delegation of cost elements is for the purposes of comparison (e.g., with NRC

financial guidelines) or to permit specific financial treatment (e.g., ARO determinations). In reality, there can be considerable interaction between the activities in the three subcategories. For example, an owner may decide to remove non-contaminated structures early in the project to improve access to highly contaminated facilities or plant components. In these instances, the non-contaminated removal costs could be reassigned from Site Restoration to an NRC License Termination support activity. However, in general, the allocations represent a reasonable accounting of those costs that can be expected to be incurred for the specific subcomponents of the total estimated program cost, if executed as described.

Cost Summary
DECON Decommissioning Scenarios
(thousands of $2011)

Scenarios	3	4
Cessation of Operations (year)	2032	2032
Spent Fuel Off Site (year)	2060	2082
Cost Element		
Decontamination	13,022	13,022
Removal	101,232	101,232
Packaging	19,640	19,640
Transportation	22,594	22,594
Waste Disposal	72,373	72,373
Off-site Waste Processing	30,062	30,062
Program Management [1]	354,132	428,472
Corporate A&G	29,506	35,017
ISFSI-Related [2]	133,736	173,508
Insurance and Regulatory Fees	17,618	27,065
Energy	7,839	7,839
Characterization and Licensing Surveys	18,200	18,200
Property Taxes	219	384
Miscellaneous Equipment	6,542	6,542
Site O&M	6,884	12,146
Spent Fuel Pool Isolation	11,822	11,822
Total [3]	845,422	979,919

Scenarios	3	4
Cost Category		
License Termination	566,714	566,714
Spent Fuel Management [4]	230,821	365,318
Site Restoration	47,887	47,887
Total	845,422	979,919

[1] Includes plant security
[2] Direct costs only: ISFSI construction, dry storage system components, cask loading and transfer
[3] Columns may not add due to rounding
[4] Includes period dependent costs, as appropriate, during fuel storage periods

Cost Summary
SAFSTOR Decommissioning Scenarios
(thousands of $2011)

Scenarios	1	2	5	6
Cessation of Operations (year)	2012	2012	2032	2032
Spent Fuel Off Site (year)	2045	2082	2060	2082
Cost Element				
Decontamination	16,969	16,969	16,969	16,969
Removal	100,554	100,949	100,528	100,639
Packaging	14,959	17,570	14,958	14,962
Transportation	18,950	18,954	18,949	18,953
Waste Disposal	42,952	42,968	43,703	43,721
Off-site Waste Processing	33,441	33,441	33,441	33,441
Program Management [1]	460,638	560,731	442,942	502,281
Corporate A&G	46,183	50,606	45,714	47,775
ISFSI-Related [2]	162,561	185,578	129,352	164,803
Insurance and Regulatory Fees	41,088	47,186	40,929	41,632
Energy	16,219	16,219	16,219	16,219
Characterization and Licensing Surveys	19,536	19,536	19,536	19,536
Property Taxes	460	533	460	460
Miscellaneous Equipment	19,769	19,769	19,769	19,769
Site O&M	14,591	16,929	14,591	14,591
Spent Fuel Pool Isolation	11,822	11,822	11,822	11,822
Total [3]	1,020,692	1,159,759	969,883	1,067,573

Scenarios	1	2	5	6
Cost Category				
License Termination	645,773	610,278	653,115	622,571
Spent Fuel Management [4]	327,127	502,979	268,976	397,211
Site Restoration	47,792	46,502	47,792	47,792
Total	1,020,692	1,159,759	969,883	1,067,573

[1] Includes plant security
[2] Direct costs only: ISFSI construction, dry storage system components, cask loading and transfer
[3] Columns may not add due to rounding
[4] Includes period dependent costs, as appropriate, during fuel storage periods

1. INTRODUCTION

This decommissioning cost analysis is intended to provide Entergy Nuclear Vermont Yankee, LLC (Entergy VY) with sufficient information to assess its current decommissioning liability as it relates to the Vermont Yankee Nuclear Power Station (Vermont Yankee). The analysis also fulfills the requirement, as delineated in the Memorandum of Understanding,[1][*] that Energy VY prepare periodic updates to the site-specific decommissioning cost study.

The analysis is not a detailed engineering evaluation, but an estimate prepared in advance of the detailed engineering required to carry out the decommissioning of the nuclear unit. It may also not reflect the actual plan to decommission Vermont Yankee; the plan may differ from the assumptions made in this analysis based on facts that exist at the time of decommissioning.

1.1 OBJECTIVE

The objective of the analysis is to prepare comprehensive estimates of the costs, detailed schedules of the associated activities, and projections of the low-level radioactive waste generated in decommissioning Vermont Yankee for a combination of shutdown dates, decommissioning alternative and spent fuel pickup assumptions.

The plant entered commercial operation in 1972 with a license to operate 40 years. In January 2006, Entergy VY and Entergy Nuclear Operations, Inc. submitted an application to the NRC for renewal of the facility operating license (DPR-28) for a period of an additional 20 years. In March 2011, the NRC approved the request to extend the facility operating license from midnight March 21, 2012, to midnight March 21, 2032. This analysis evaluates decommissioning options for both the original license expiration date and the extended date.

1.2 SITE DESCRIPTION

Vermont Yankee is a single unit facility located near the town of Vernon, Vermont. The site is located in Windham County on the western shore of the Connecticut River, immediately upstream of the Vernon Hydroelectric Station. The boiling water reactor (BWR), and supporting facilities are owned and operated by Entergy VY.

[*] Annotated references for citations in Sections 1-6 are provided in Section 7

The station comprises a single boiling water reactor, designed and fabricated by General Electric Company, producing steam for direct use in the steam turbine. Supporting facilities were engineered and constructed by Ebasco Services, Inc.

The reactor vessel and the recirculation system are contained within the drywell of a pressure suppression system housed within the reactor building. The system consists of a drywell, a pressure suppression chamber that stores a large volume of water, and a connecting submerged vent system between the drywell and water pool, isolation valves, containment cooling systems, and other service equipment. The reactor building encloses the pressure suppression primary containment thereby providing a secondary containment.

In September 2003, Entergy VY requested an amendment to its facility operating license (DPR-28) to increase the maximum authorized power level from 1593 Megawatts-thermal (MWt) to 1912 MWt. The request was subsequently approved and the unit is operating at the higher level.

Heat produced in the reactor is converted to electrical energy by the power conversion system. A turbine-generator system converts the thermal energy of steam produced by the reactor into mechanical shaft power and then into electrical energy. The turbine consists of a high-pressure cylinder and two double-flow low-pressure cylinders all aligned in tandem. The generator is a direct-driven 1800 rpm conductor-cooled, synchronous generator. The turbine is operated in a closed feedwater cycle which condenses the steam; the heated feedwater is returned to the reactor. Heat rejected in the main condensers is removed by the circulating water system.

The circulating water system provides the heat sink required for removal of waste heat in the power plant's thermal cycle. This system has the principal function of removing heat by absorbing this energy in the main condenser. Circulating water is drawn from the Connecticut River with heated cooling water returned to the river. Alternatively, the circulating water is recirculated through the system exchanging its heat with the atmosphere by means of cooling towers.

1.3 REGULATORY GUIDANCE

The Nuclear Regulatory Commission (NRC or Commission) provided initial decommissioning requirements in its rule "General Requirements for Decommissioning Nuclear Facilities," issued in June 1988.[2] This rule set forth financial criteria for decommissioning licensed nuclear power facilities. The regulation addressed decommissioning planning needs, timing, funding

methods, and environmental review requirements. The intent of the rule was to ensure that decommissioning would be accomplished in a safe and timely manner and that adequate funds would be available for this purpose. Subsequent to the rule, the NRC issued Regulatory Guide 1.159, "Assuring the Availability of Funds for Decommissioning Nuclear Reactors,"[3] which provided additional guidance to the licensees of nuclear facilities on the financial methods acceptable to the NRC staff for complying with the provisions of the rule. The regulatory guide addressed the funding requirements and provided guidance on the content and form of the financial assurance mechanisms identified in the rule.

The rule defined three decommissioning alternatives as being acceptable to the NRC: DECON, SAFSTOR, and ENTOMB. The DECON alternative assumes that any contaminated or activated portion of the plant's systems, structures and facilities are removed or decontaminated to levels that permit the site to be released for unrestricted use shortly after the cessation of plant operations, while the SAFSTOR and ENTOMB alternatives defer the process.

The rule also placed limits on the time allowed to complete the decommissioning process. For all alternatives, the process is restricted in overall duration to 60 years, unless it can be shown that a longer duration is necessary to protect public health and safety. At the conclusion of a dormancy period, the site would still require significant remediation to meet the unrestricted release limits for license termination.

The ENTOMB alternative has not been viewed as a viable option for power reactors due to the significant time required to isolate the long-lived radionuclides for decay to permissible levels. With the rulemaking permitting the controlled release of a site,[4] the NRC did re-evaluate the alternative. The resulting feasibility study, based upon an assessment by Pacific Northwest National Laboratory, concluded that the method did have conditional merit for some, if not most reactors. The staff also found that additional rulemaking would be needed before this option could be treated as a generic alternative.

The NRC had considered rulemaking to alter the 60-year time for completing decommissioning and to clarify the use of engineered barriers for reactor entombments.[5] However, the NRC's staff has subsequently recommended that rulemaking be deferred, based upon several factors (e.g., no licensee has committed to pursuing the entombment option, the unresolved issues associated with the disposition of greater-than-Class C material (GTCC), and the NRC's current priorities), at least until after the additional research studies are complete. The Commission concurred with the staff's recommendation.

In 1996, the NRC published revisions to the general requirements for decommissioning nuclear power plants.[6] When the decommissioning regulations were adopted in 1988, it was assumed that the majority of licensees would decommission at the end of the facility's operating licensed life. Since that time, several licensees permanently and prematurely ceased operations. Exemptions from certain operating requirements were required once the reactor was defueled to facilitate the decommissioning. Each case was handled individually, without clearly defined generic requirements. The NRC amended the decommissioning regulations in 1996 to clarify ambiguities and codify procedures and terminology as a means of enhancing efficiency and uniformity in the decommissioning process. The amendments allow for greater public participation and better define the transition process from operations to decommissioning.

Under the revised regulations, licensees will submit written certification to the NRC within 30 days after the decision to cease operations. Certification will also be required once the fuel is permanently removed from the reactor vessel. Submittal of these notices entitle the licensee to a fee reduction and eliminate the obligation to follow certain requirements needed only during operation of the reactor. Within two years of submitting notice of permanent cessation of operations, the licensee is required to submit a Post-Shutdown Decommissioning Activities Report (PSDAR) to the NRC. The PSDAR describes the planned decommissioning activities, the associated sequence and schedule, and an estimate of expected costs. Prior to completing decommissioning, the licensee is required to submit an application to the NRC to terminate the license, which includes a license termination plan (LTP).

1.3.1 Nuclear Waste Policy Act

Congress passed the "Nuclear Waste Policy Act"[7] (NWPA) in 1982, assigning the federal government's long-standing responsibility for disposal of the spent nuclear fuel created by the commercial nuclear generating plants to the DOE. It was to begin accepting spent fuel by January 31, 1998; however, to date no progress in the removal of spent fuel from commercial generating sites has been made.

Completion of the decommissioning process is dependent upon the DOE's ability to remove spent fuel from the site in a timely manner. DOE's repository program assumes that spent fuel allocations will be accepted for disposal from the nation's commercial nuclear plants, with limited exceptions, in the order (the "queue") in which it was discharged from the reactor. Entergy's current spent fuel management plan for the Vermont Yankee spent fuel is based in general upon: 1) a 2020 start date for DOE

initiating transfer of commercial spent fuel to a federal facility and 2) expectations for spent fuel receipt by the DOE for the Vermont Yankee fuel. The DOE's generator allocation/receipt schedules are based upon the oldest fuel receiving the highest priority. Assuming a maximum rate of transfer of 3,000 metric tons of uranium (MTU)/year,[8] the spent fuel is completely removed from the site in 2045 for a 2012 shutdown (Scenario 1) and in 2060 for a 2032 shutdown (Scenarios 3 and 5). The latest fuel removal completion date, as proposed by the Vermont Department of Public Service, would be 2082 (Scenarios 2, 4 and 6).

The assumed 2020 DOE start date is nominally based on the last position stated by the DOE. On July 15, 2008, the then-Director of the DOE's Office of Civilian Radioactive Waste Management testified before Congress that DOE "could be ready to begin accepting spent nuclear fuel by 2020." His statement was based on continued program funding.

Today, the country is at an impasse on high-level waste disposal. The current administration has cut the budget for the geological repository program while promising to "conduct a comprehensive review of policies for managing the back end of the nuclear fuel cycle … and make recommendations for a new plan." Towards this goal, the administration appointed a Blue Ribbon Commission on America's Nuclear Future (Blue Ribbon Commission) to make recommendations for a new plan for nuclear waste disposal. The Blue Ribbon Commission's charter includes a requirement that it consider "[o]ptions for safe storage of used nuclear fuel while final disposition pathways are selected and deployed."[9]

On January 26, 2012, the Blue Ribbon Commission issued its "Report to the Secretary of Energy" containing a number of recommendations on nuclear waste disposal. Two of the recommendations that may impact decommissioning planning are:

- "[T]he United States [should] establish a program that leads to the timely development of one or more consolidated storage facilities."
- "[T]he United States should undertake an integrated nuclear waste management program that leads to the timely development of one or more permanent deep geological facilities for the safe disposal of spent fuel and high-level nuclear waste."[10]

Entergy believes that one or more monitored retrievable storage facilities could be put into place, with the Blue Ribbon Commission recommendation

for the same, within a reasonable time. For example, a facility such as that licensed by the NRC to Private Fuel Storage could be used by the DOE to store fuel until a final disposition is determined.

The Public Service Board of the State of Vermont ordered (in Docket 7082) that Entergy's spent fuel management plan should consider long-term storage of the spent nuclear fuel on-site if the federal Department of Energy does not remove the fuel under its current schedule, at a minimum, through 2082. As such, the three base scenarios (Scenarios 1, 3 and 5) are also evaluated for the extended spent fuel management interval (as Scenarios 2, 4 and 6).

The NRC requires that licensees establish a program to manage and provide funding for the caretaking of all irradiated fuel at the reactor site until title of the fuel is transferred to the DOE.[11] Interim storage of the fuel, until the DOE has completed the transfer, will be in the reactor building storage pool as well as at an on-site ISFSI(s).

The analysis assumes that a second ISFSI is constructed at the site to accommodate all of the spent fuel generated from reactor operations. Once the reactor building's storage pool is emptied, the building can be either decontaminated and dismantled or prepared for long-term storage. The ISFSI will operate under an amended Part 50 license once the plant's operating license is terminated.

1.3.2 Low-Level Radioactive Waste Policy Amendments Act

The contaminated and activated material generated from the decontamination and dismantling of a commercial nuclear reactor is generally classified as low-level radioactive waste, although not all of the material is suitable for shallow-land disposal. With the passage of the "Low-Level Radioactive Waste Disposal Act" in 1980,[12] and its Amendments of 1985,[13] the states became ultimately responsible for the disposition of low-level radioactive waste generated within their own borders.

Vermont, along with Maine, joined with Texas to form a compact for the disposal of low-level radioactive waste generated by the three states, with Texas as the host state. The Maine Legislature subsequently voted to exit the Texas compact (effective April 5, 2002) following the shutdown and decommissioning of its only commercial nuclear unit (Maine Yankee). Vermont remains a member of the compact.

The Texas Commission on Environmental Quality (TCEQ), the environmental agency for the state, is responsible for the licensing of any low-level radioactive waste disposal facility in Texas. In 2004, the agency received an application from Waste Control Specialists (WCS) for authorization to construct and operate a low-level radioactive disposal site in Andrews County. The agency granted WCS a disposal license in 2009 and approval to commence construction in early 2011. Construction of the disposal facility is now essentially complete and the facility was declared operational in November 2011.

A significant portion of the radioactive waste generated during decommissioning is only slightly contaminated and, as such, can be shipped to licensed commercial waste conditioning/recovery facilities. Volume reduction is accomplished through a variety of methods including surveying (for non-verified clean material), incineration, compaction and metal-melt. Costs for waste processing/reduction were based upon existing agreements with Entergy VY and/or Entergy vendors.

To date, the TCEQ has only published interim disposal rates for the facility, in advance of the formal disposal rate-setting process. As such, for this analysis, disposition of the various waste streams produced by the decommissioning process considered all options and services available to Entergy VY. The majority of the low-level radioactive waste designated for direct disposal (Class A[14]) can be sent to Energy*Solutions*' facility in Clive, Utah. Therefore, disposal costs for Class A waste were based upon Entergy's *Life of Plant Agreement* with Energy*Solutions*. This facility is not licensed to receive the higher activity portion (Classes B and C) of the waste stream. Disposal costs for the Class B and C waste were based upon the interim rates for the WCS facility.

The disposition of the various types of radioactive and non-radioactive waste generated in the decommissioning of Vermont Yankee and their assumed destination are discussed in more details in Sections 3 and 5.

1.3.3 Radiological Criteria for License Termination

In 1997, the NRC published Subpart E, "Radiological Criteria for License Termination,"[15] amending 10 CFR Part 20. This subpart provides radiological criteria for releasing a facility for unrestricted use. The regulation states that the site can be released for unrestricted use if radioactivity levels are such that the average member of a critical group

would not receive a Total Effective Dose Equivalent (TEDE) in excess of 25 millirem per year, and provided that residual radioactivity has been reduced to levels that are As Low As Reasonably Achievable (ALARA). The decommissioning estimates assume that the Vermont Yankee site will be remediated to a residual level consistent with the NRC-prescribed level.

It should be noted that the NRC and the Environmental Protection Agency (EPA) differ on the amount of residual radioactivity considered acceptable in site remediation. The EPA has two limits that apply to radioactive materials. An EPA limit of 15 millirem per year is derived from criteria established by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund).[16] An additional and separate limit of 4 millirem per year, as defined in 40 CFR §141.16, is applied to drinking water.[17]

On October 9, 2002, the NRC signed an agreement with the EPA on the radiological decommissioning and decontamination of NRC-licensed sites. The Memorandum of Understanding (MOU)[18] provides that EPA will defer exercise of authority under CERCLA for the majority of facilities decommissioned under NRC authority. The MOU also includes provisions for NRC and EPA consultation for certain sites when, at the time of license termination, (1) groundwater contamination exceeds EPA-permitted levels; (2) NRC contemplates restricted release of the site; and/or (3) residual radioactive soil concentrations exceed levels defined in the MOU.

The MOU does not impose any new requirements on NRC licensees and should reduce the involvement of the EPA with NRC licensees who are decommissioning. Most sites are expected to meet the NRC criteria for unrestricted use, and the NRC believes that only a few sites will have groundwater or soil contamination in excess of the levels specified in the MOU that trigger consultation with the EPA. However, if there are other hazardous materials on the site, the EPA may be involved in the cleanup. As such, the possibility of dual regulation remains for certain licensees. The present study does not include any costs for this occurrence.

2. DECOMMISSIONING ALTERNATIVES

Costs were determined for decommissioning Vermont Yankee for the NRC-approved decommissioning alternatives: DECON and SAFSTOR, and for the scenarios identified below. Although the alternatives differ with respect to technique, process, cost, and schedule, they attain the same result: the ultimate release of the site for unrestricted use.

Scenario	Shutdown Date	Decommissioning Alternative	Spent Fuel Off Site
1	2012	SAFSTOR	2045
2	2012	SAFSTOR	2082
3	2032	DECON	2060
4	2032	DECON	2082
5	2032	SAFSTOR	2060
6	2032	SAFSTOR	2082

The following sections describe the basic activities associated with each alternative. Although detailed procedures for each activity identified are not provided, and the actual sequence of work may vary, the activity descriptions provide a basis not only for estimating but also for the expected scope of work (i.e., engineering and planning at the time of decommissioning).

The conceptual approach that the NRC has described in its regulations divides decommissioning into three phases. The initial phase commences with the effective date of permanent cessation of operations and involves the transition of both plant and licensee from reactor operations (i.e., power production) to facility de-activation and closure. During the first phase, notification is to be provided to the NRC certifying the permanent cessation of operations and the removal of fuel from the reactor vessel. The licensee is then prohibited from reactor operation.

The second phase encompasses activities during the storage period or during major decommissioning activities, or a combination of the two. The third phase pertains to the activities involved in license termination. The decommissioning estimates developed for Vermont Yankee are also divided into phases or periods; however, demarcation of the phases is based upon major milestones within the project or significant changes in the projected expenditures.

2.1 DECON

The DECON alternative, as defined by the NRC, is "the alternative in which the equipment, structures, and portions of a facility and site containing radioactive contaminants are removed or decontaminated to a level that permits the property to be released for unrestricted use shortly after cessation of operations." This analysis does not address the cost to dispose of the spent fuel residing at the site; such costs are funded through a surcharge on electrical generation. However, the analysis does include the costs incurred with the interim on-site storage of the fuel pending shipment by the DOE to a federal repository. Scenarios 3 and 4 in this analysis are DECON scenarios.

2.1.1 Period 1 - Preparations

In anticipation of the cessation of plant operations, detailed preparations are undertaken to provide a smooth transition from plant operations to site decommissioning. Through implementation of a staffing transition plan, the organization required to manage the intended decommissioning activities is assembled from available plant staff and outside resources. Preparations include the planning for permanent defueling of the reactor, revision of technical specifications applicable to the operating conditions and requirements, a characterization of the facility and major components, and the development of the PSDAR.

Engineering and Planning

The PSDAR, required prior to or within two years of permanent cessation of operations, provides a description of the licensee's planned decommissioning activities, a timetable, and the associated financial requirements of the intended decommissioning program. Upon receipt of the PSDAR, the NRC will make the document available to the public for comment in a local hearing to be held in the vicinity of the reactor site. Ninety days following submittal and NRC receipt of the PSDAR, the licensee may begin to perform major decommissioning activities under a modified 10 CFR §50.59 procedure, i.e., without specific NRC approval. Major activities are defined as any activity that results in permanent removal of major radioactive components, permanently modifies the structure of the containment, or results in dismantling components (for shipment) containing Greater-than-Class C waste (GTCC), as defined by 10 CFR §61. Major components are further defined as the reactor vessel and internals, large bore reactor recirculation system piping, and other large components that are

radioactive. The NRC includes the following additional criteria for use of the §50.59 process in decommissioning. The proposed activity must not:

- foreclose release of the site for possible unrestricted use,
- significantly increase decommissioning costs,
- cause any significant environmental impact, or
- violate the terms of the licensee's existing license.

Existing operational technical specifications are reviewed and modified to reflect plant conditions and the safety concerns associated with permanent cessation of operations. The environmental impact associated with the planned decommissioning activities is also considered. Typically, a licensee is not allowed to proceed if the consequences of a particular decommissioning activity are greater than that bounded by previously evaluated environmental assessments or impact statements. In this instance, the licensee would have to submit a license amendment for the specific activity and update the environmental report.

The decommissioning program outlined in the PSDAR is designed to accomplish the required tasks within the ALARA guidelines (as defined in 10 CFR §20) for protection of personnel from exposure to radiation hazards. It also addresses the continued protection of the health and safety of the public and the environment during the dismantling activity. Consequently, with the development of the PSDAR, activity specifications, cost-benefit and safety analyses, work packages and procedures, are assembled to support the proposed decontamination and dismantling activities.

Site Preparations

Following final plant shutdown and in preparation for actual decommissioning activities, the following activities are initiated:

- Characterize the site and surrounding environs. This includes radiation surveys of work areas, major components (including the reactor vessel and its internals), internal piping, and primary shield cores.
- Isolate the spent fuel storage pool and fuel handling systems, such that decommissioning operations can commence on the balance of the plant. The pool remains operational for approximately five and one half years following the cessation of operations before the residual inventory is transferred to the ISFSI.

- Construct a second ISFSI (the existing ISFSI has a capacity of 36 casks which is not sufficient to off-load the entire pool). Relocate the spent fuel storage pool assemblies and the fuel on the original ISFSI so that decommissioning can proceed on the power block structures.
- Specify transport and disposal requirements for activated materials and/or hazardous materials, including shielding and waste stabilization.
- Develop procedures for occupational exposure control, control and release of liquid and gaseous effluent, processing of radwaste (including dry-active waste, resins, filter media, metallic and non-metallic components generated in decommissioning), site security and emergency programs, and industrial safety.

2.1.2 Period 2 - Decommissioning Operations and License Termination

This period includes the physical decommissioning activities associated with the removal and disposal of contaminated and activated components and structures, including the successful release of the site from the 10 CFR §50 operating license, exclusive of the ISFSI. Significant decommissioning activities in this phase include:

- Construction of temporary facilities and/or modification of existing facilities to support dismantling activities. For example, this will include a centralized processing area to facilitate equipment removal and component preparations for off-site disposal.
- Reconfiguration and modification of site structures and facilities as needed to support decommissioning operations. This will include the upgrading of roads (on- and off-site) to facilitate hauling and transport. Modifications will be required to the containment structure to facilitate access of large/heavy equipment. Modifications will also be required to the refueling area of the building to support the segmentation of the reactor vessel internals and component extraction.
- Design and fabrication of temporary and permanent shielding to support removal and transportation activities, construction of contamination control envelopes, and the procurement of specialty tooling.
- Procurement (lease or purchase) of shipping canisters, cask liners, and industrial packages for the disposition of low-level radioactive waste.

- Decontamination of components and piping systems as required to control (minimize) worker exposure.
- Removal of piping and components no longer essential to support decommissioning operations.
- Transfer of the steam separator and dryer assemblies to the dryer-separator pool for segmentation. Segmentation by weight and activity maximizes the loading of the shielded transport casks. The operations are conducted under water using remotely operated tooling and contamination controls.
- Disconnection of the control blades from the drives on the vessel lower head. Blades are transferred to the dryer-separator pool for packaging. The drives are assumed to be removed with the rest of the contaminated equipment in the drywell.
- Disassembly, segmentation, and packaging of the core shroud and in-core guide tubes. Some of the material is expected to exceed Class C disposal requirements. As such, those segments are packaged in modified fuel storage canisters for geologic disposal.
- Removal and segmentation of the remaining internals, including the top fuel guide, feedwater and core spray spargers, in-core instrument tubes, fuel support pieces, control rod guide tubes, jet pumps and core support assembly.
- Draining and decontamination of the reactor well. Install a shielded platform for segmentation of reactor vessel. Cutting operations are performed in air using remotely operated equipment within a contamination control envelope, with the water level maintained just below the cut to minimize the working area dose rates. Sections are transferred to the dryer-separator pool for packaging and interim storage.
- Disconnection of the control rod drives and instrumentation tubes from reactor vessel lower head. The lower reactor head and vessel supporting structure are then segmented.
- Removal of the reactor recirculation pumps. Exterior surfaces are decontaminated and openings covered. Components can serve as their own burial containers provided that all penetrations are properly sealed.

At least two years prior to the anticipated date of license termination, an LTP is required. Submitted as a supplement to the Final Safety Analysis Report (FSAR) or its equivalent, the plan must include: a site characterization, description of the remaining dismantling activities,

plans for site remediation, procedures for the final radiation survey, designation of the end use of the site, an updated cost estimate to complete the decommissioning, and any associated environmental concerns. The NRC will notice the receipt of the plan, make the plan available for public comment, and schedule a local hearing. LTP approval will be subject to any conditions and limitations as deemed appropriate by the Commission. The licensee may then commence with the final remediation of site facilities and services, including:

- Removal of the remaining plant systems and associated components as they become nonessential to the decommissioning program or worker health and safety (e.g., waste collection and treatment systems, electrical power and ventilation systems).
- Removal of the sacrificial shield by controlled demolition.
- Removal of the steel liner from the drywell, and the torus. Dispose of the activated and contaminated sections as radioactive waste. Dispose of any activated/contaminated drywell concrete.
- Removal of the steel liners from the steam separator and dryer pool, and reactor well. Remove any contaminated concrete behind the liners.
- Surveys of the remaining portions of the containment structure.
- Removal of the contaminated equipment and material from the turbine, auxiliary and radwaste buildings, and any other contaminated facility. Use radiation and contamination control techniques until radiation surveys indicate that the structures can be released for unrestricted access and conventional demolition. This activity may necessitate the dismantling and disposition of most of the systems and components (both clean and contaminated) located within these buildings. This activity will facilitate surface decontamination and subsequent verification surveys required prior to obtaining release for demolition.
- Routing of material removed in the decontamination and dismantling to a central processing area. Material certified to be free of contamination is released for unrestricted disposition (e.g., as scrap, recycle, or general disposal). Contaminated material is characterized and segregated for additional off-site processing (disassembly, chemical cleaning, volume reduction, and waste treatment), and/or packaged for controlled disposal at a low-level radioactive waste disposal facility.

- Excavating of the perimeter of the power block to ensure the removal of buried piping and site services

Incorporated into the LTP is the Final Survey Plan. This plan identifies the radiological surveys to be performed once the decontamination activities are completed and is developed using the guidance provided in the "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)."[19] This document incorporates the statistical approaches to survey design and data interpretation used by the EPA. It also identifies commercially available instrumentation and procedures for conducting radiological surveys. Use of this guidance ensures that the surveys are conducted in a manner that provides a high degree of confidence that applicable NRC criteria are satisfied. Once the survey is complete, the results are provided to the NRC in a format that can be verified. The NRC then reviews and evaluates the information, performs an independent confirmation of radiological site conditions, and makes a determination on the requested change to the operating license (that would release the property, exclusive of the ISFSI(s), for unrestricted use).

The NRC will amend the operating license if it determines that site remediation has been performed in accordance with the LTP, and that the terminal radiation survey and associated documentation demonstrate that the property (exclusive of the ISFSIs) is suitable for release.

2.1.3 Period 3 - Site Restoration

Following completion of decommissioning operations, site restoration activities will begin. Efficient removal of the contaminated materials and verification that residual radionuclide concentrations are below the NRC limits may result in substantial damage to many of the structures. Although performed in a controlled, safe manner, blasting, coring, drilling, scarification (surface removal), and the other decontamination activities will substantially degrade power block structures including the reactor, turbine and radwaste buildings. Verifying that subsurface radionuclide concentrations meet NRC site release requirements may require removal of grade slabs and lower floors, potentially weakening footings and structural supports. This removal activity will be necessary for those facilities and plant areas where historical records, when available, indicate the potential for radionuclides having been present in the soil, where system failures have been recorded, or where it is

required to confirm that subsurface process and drain lines were not breached over the operating life of the station.

It is not currently anticipated that these structures would be repaired and preserved after the radiological contamination is removed. The cost to dismantle site structures with a work force already mobilized on site is more efficient than if the process is deferred.

This analysis presumes that miscellaneous structures and site facilities are dismantled as a continuation of the decommissioning activity. In addition to the power block structures, the following facilities were included in the estimates for site restoration.

- Gatehouse #3
- Aquatec Building
- Utility Shed
- Warehouse #1 & #2
- Clean Workshop
- Clean Workshop Addition
- Spray Pond
- Salt Shed
- Transformer and Tank Foundations
- CST pipe trench
- Shipping & Receiving Building
- Bulk Hydrogen Facility
- Power Uprate Building
- Domed Warehouse

Foundations and exterior walls are removed to a nominal depth of three feet below grade. The three-foot depth allows for the placement of gravel for drainage, as well as topsoil, so that vegetation can be established for erosion control. Site areas affected by the dismantling activities are restored and the plant area graded as required to prevent ponding and inhibit the refloating of subsurface materials.

Non-contaminated concrete rubble produced by demolition activities is processed to remove reinforcing steel and miscellaneous embedments. The processed material is then trucked off-site for recycling/recovery and/or disposal as construction debris.

2.1.4 Post-Period 3 - ISFSI Operations and Decommissioning

For purposes only of this estimate, transfer of spent fuel to a DOE repository or interim facility is assumed to be exclusively from the ISFSI once the fuel pool has been emptied and the spent fuel pool area released for decommissioning. The ISFSI will continue to operate under a general license (10 CFR Part 50) following the amendment of the operating license to release the adjacent (power block) property.

At the conclusion of the spent fuel transfer process, the ISFSI will be decommissioned. The NRC will terminate the Part 50 license when it determines that the remediation of the ISFSI has been performed in accordance with an ISFSI license termination plan and that the final radiation survey and associated documentation demonstrate that the facility is suitable for release. Once the requirements are satisfied, the NRC can terminate the license for the ISFSI.

The design of the ISFSI is based upon the use of a multi-purpose canister and a vertical concrete module/overpack for pad storage. It is assumed that once the inner canisters containing the spent fuel assemblies have been removed, any required decontamination is performed on the storage modules (some minor activation is assumed), and the license for the facility terminated, the modules can be dismantled using conventional techniques for the demolition of reinforced concrete. The concrete storage pad is then removed and the area regraded.

2.2 SAFSTOR

The NRC defines SAFSTOR as "the alternative in which the nuclear facility is placed and maintained in a condition that allows the nuclear facility to be safely stored and subsequently decontaminated (deferred decontamination) to levels that permit release for unrestricted use." The facility is left intact (during the dormancy period), with structures maintained in a sound condition. Systems that are not required to support the spent fuel pool or site surveillance and security are drained, de-energized, and secured. Minimal cleaning/removal of loose contamination and/or fixation and sealing of remaining contamination are performed. Access to contaminated areas is secured to provide controlled access for inspection and maintenance. Scenarios 1, 2, 5 and 6 are SAFSTOR scenarios.

The engineering and planning requirements are similar to those for the DECON alternative, although a shorter time period is expected for these

activities due to the more limited work scope. Site preparations are also similar to those for the DECON alternative. However, with the exception of the required radiation surveys and site characterizations, the mobilization and preparation of site facilities is less extensive.

2.2.1 Period 1 - Preparations

Preparations for long-term storage include the planning for permanent defueling of the reactor, revision of technical specifications appropriate to the operating conditions and requirements, a characterization of the facility and major components, and the development of the PSDAR.

The process of placing the plant in safe-storage includes, but is not limited to, the following activities:

- Isolate the spent fuel storage services and fuel handling systems so that safe-storage operations may commence on the balance of the plant. This activity is carried out by plant personnel in accordance with existing operating technical specifications. Activities are scheduled around the fuel handling systems to the greatest extent possible.
- Transfer the spent fuel from the storage pool to the ISFSI pad for interim storage, following the minimum required cooling period in the spent fuel pool.
- Dispose contaminated filter elements and resin beds not required for processing wastes from layup activities.
- Drain the reactor vessel, with the internals left in place and the vessel head secured.
- Drain and de-energize non-essential, contaminated systems with decontamination as required for future maintenance and inspection.
- Reconfigure lighting and alarm systems; de-energizing portions of fire protection, electric power, and HVAC systems whose continued use is not required.
- Clean the loose surface contamination from building access pathways.
- Perform an interim radiation survey of plant, posting warning signs where appropriate.
- Erect physical barriers and/or securing access to radioactive or contaminated areas, except as required for inspection and maintenance.

- Install and/or maintain security and surveillance monitoring equipment and relocate security fence around secured structures, as required.

2.2.2 Period 2 - Dormancy

The second phase identified by the NRC in its rule addresses licensed activities during a storage period and is applicable to the dormancy phases of the deferred decommissioning alternatives. Dormancy activities include a 24-hour security force, preventive and corrective maintenance on security systems, area lighting, general building maintenance, heating and ventilation of buildings, routine radiological inspections of contaminated structures, maintenance of structural integrity, and a site environmental and radiation monitoring program.

Retention of access to administrative computing functions or equivalent is required to maintain work management, corrective action and other administrative functions.

Resident maintenance personnel perform equipment maintenance, inspection activities, routine services to maintain safe conditions, adequate lighting, heating, and ventilation, and periodic preventive maintenance on essential site services.

An environmental surveillance program is carried out during the dormancy period. Appropriate emergency procedures are established and initiated for potential releases that exceed prescribed limits. The environmental surveillance program constitutes an abbreviated version of the program in effect during normal plant operations.

Security during the dormancy period is conducted primarily to prevent unauthorized entry and to protect the public from the consequences of its own actions. The security fence, sensors, alarms, and other surveillance equipment are maintained throughout the dormancy period. Fire and radiation alarms are also functional.

Consistent with the DECON scenario, the spent fuel storage pool is emptied approximately five and one-half years following the cessation of operations. The transfer of the spent fuel from the ISFSI to a DOE facility continues throughout the dormancy period (and in Scenario 2, beyond).

After an optional period of storage (such that license termination is accomplished within 60 years of final shutdown), it is required that the licensee submit an application to terminate the license, along with an LTP (described in Section 2.1.2), thereby initiating the third phase.

2.2.3 Periods 3 and 4 - Deferred Decommissioning

Prior to the commencement of decommissioning operations, preparations are undertaken to reactivate site services and prepare for decommissioning. Preparations include engineering and planning, a detailed site characterization, and the assembly of a decommissioning management organization. Final planning and the assembly of activity specifications and detailed work procedures are also initiated at this time.

Much of the work in developing a termination plan is relevant to the development of the detailed engineering plans and procedures. The activities associated with this phase and the follow-on decontamination and dismantling processes are detailed in Sections 2.1.1 and 2.1.2. The primary difference between the sequences anticipated for the DECON and this deferred scenario is the absence, in the latter, of any constraint on the dismantling process due to the operation of the spent fuel pool in the DECON option.

Variations in the length of the dormancy period are expected to have some effect upon the quantities of radioactive wastes generated from system and structure removal operations. However, given the levels of radioactivity and spectrum of radionuclides expected from forty to sixty years of plant operation, no plant process system identified as being contaminated upon final shutdown will become releasable due to the decay period alone. However, due to the lower activity levels, a greater percentage of the waste volume can be designated for off-site processing and recovery.

The delay in decommissioning also yields lower working area radiation levels. As such, the estimates for the SAFSTOR scenarios incorporate reduced ALARA controls for the lower occupational exposure potential.

Although the initial radiation levels due to ^{60}Co will substantially decrease during the dormancy period, the internal components of the reactor vessel still exhibit sufficiently high radiation dose rates to require remote sectioning (due to the presence of long-lived radionuclides such as ^{94}Nb, ^{59}Ni, and ^{63}Ni). Therefore, the dismantling

procedures described for the DECON alternative are still employed in this scenario. Portions of the sacrificial shield are still radioactive due to the presence of activated trace elements with long half-lives (e.g., ^{152}Eu and ^{154}Eu). Decontamination will require controlled removal and disposal. It is assumed that radioactive corrosion products on inner surfaces of piping and components have not decayed to levels that permit unrestricted use or allow conventional removal. These systems and components will be surveyed as they are removed and disposed of in accordance with the existing radioactive release criteria.

2.2.4 Period 5 - Site Restoration

Following completion of decommissioning operations, site-restoration activities begin. Dismantling as a continuation of the decommissioning process is a cost-effective option, as described in Section 2.1.3. The basis for the dismantling costs is consistent with that described for DECON, presuming the removal of structures and site facilities to a nominal depth of three feet below grade and the limited restoration of the site.

2.2.5 Post-Period 5 - ISFSI Operations and Decommissioning

Decommissioning is completed in Scenario 2 prior to the transfer of spent fuel from the site (in accordance with the 60-year limitation). Once the fuel has been removed, the ISFSI will be decommissioned as described in Section 2.1.4.

3. COST ESTIMATES

The estimates prepared for decommissioning Vermont Yankee consider the unique features of the site, including the nuclear steam system supply, electric power generating systems, structures, and supporting facilities. The basis of the estimates, including the sources of information relied upon, the estimating methodology employed, site-specific considerations, and other pertinent assumptions, is described in this section.

3.1 BASIS OF ESTIMATES

The current estimates were developed using the site-specific, technical information relied upon in the decommissioning analysis prepared in 2006.[20] This information was reviewed for the current analysis and updated to reflect any significant changes in the plant configuration over the past five years. The site-specific considerations and assumptions used in the previous evaluation were also revisited. Modifications were incorporated where new information was available or experience from previously completed decommissioning projects provided viable alternatives or improved processes.

3.2 METHODOLOGY

The methodology used to develop the estimates follows the basic approach originally presented in the AIF/NESP-036 study report, "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates,"[21] and the DOE "Decommissioning Handbook."[22] These documents present a unit cost factor method for estimating decommissioning activity costs that simplifies the calculations. Unit factors for concrete removal ($/cubic yard), steel removal ($/ton), and cutting costs ($/inch) were developed using local labor rates. The activity-dependent costs were then estimated with the item quantities (cubic yards and tons), developed from plant drawings and inventory documents. Removal rates and material costs for the conventional disposition of components and structures relied upon information available in the industry publication, "Building Construction Cost Data," published by R.S. Means.[23]

The unit factor method provides a demonstrable basis for establishing reliable cost estimates. The detail provided in the unit factors, including activity duration, labor costs (by craft), and equipment and consumable costs, ensures that essential elements have not been omitted. Appendix A presents the detailed development of a typical unit factor. Appendix B provides the values contained within one set of factors developed for this analysis.

This analysis reflects lessons learned from TLG's involvement in the Shippingport Station decommissioning, completed in 1989, as well as the decommissioning of the Cintichem reactor, hot cells, and associated facilities, completed in 1997. In addition, the planning and engineering for the Pathfinder, Shoreham, Rancho Seco, Trojan, Yankee Rowe, Big Rock Point, Maine Yankee, Humboldt Bay-3, Connecticut Yankee, and San Onofre-1 nuclear units have provided additional insight into the process, the regulatory aspects, and the technical challenges of decommissioning commercial nuclear units.

Work Difficulty Factors

TLG has historically applied work difficulty adjustment factors (WDFs) to account for the inefficiencies in working in a power plant environment. WDFs are assigned to each unique set of unit factors, commensurate with the working conditions. The ranges used for the WDFs are as follows:

- Access Factor 0% to 30%
- Respiratory Protection Factor 0% to 50%
- Radiation/ALARA Factor 0% to 100%
- Protective Clothing Factor 0% to 50%
- Work Break Factor 8.33%

The factors and their associated range of values were originally developed in conjunction with the AIF/NESP-036 study. The factors (and their suggested application) are discussed in more detail in Appendix F.

Scheduling Program Durations

Area activity durations are used to develop the total decommissioning program schedule. The unit cost factors, adjusted for WDFs as described above, are applied against the inventory of materials to be removed in each defined work area. The work area is then evaluated for the most efficient number of workers/crews for the identified decommissioning activities. The adjusted unit cost factors are then compared against the available manpower so that an overall duration for removal of components and piping from each work area can be calculated.

The schedule is used to assign carrying costs, which include program management, administration, field engineering, equipment rental, and support services such as quality control and security.

3.3 FINANCIAL COMPONENTS OF THE COST MODEL

TLG's proprietary decommissioning cost model, DECCER, produces a number of distinct cost elements. These direct expenditures, however, do not comprise the total cost to accomplish the project goal (i.e., license termination and site restoration).

Inherent in any cost estimate that does not rely on historical data is the inability to specify the precise source of costs imposed by factors such as tool breakage, accidents, illnesses, weather delays, and labor stoppages. In the DECCER cost model, contingency fulfills this role. Contingency is added to each line item to account for costs that are difficult or impossible to develop analytically. Such costs are historically inevitable over the duration of a job of this magnitude; therefore, this cost analysis includes allowances to cover these types of expenses.

3.3.1 Contingency

The activity- and period-dependent costs are combined to develop the total decommissioning cost. A contingency is then applied on a line-item basis, using one or more of the contingency types listed in the AIF/NESP-036 study. "Contingencies" are defined in the American Association of Cost Engineers "Project and Cost Engineers' Handbook"[24] as "specific provision for unforeseeable elements of cost within the defined project scope; particularly important where previous experience relating estimates and actual costs has shown that unforeseeable events which will increase costs are likely to occur." The cost elements in this analysis are based upon ideal conditions and maximum efficiency; therefore, consistent with industry practice, contingency is included. In the AIF/NESP-036 study, the types of unforeseeable events that are likely to occur in decommissioning are discussed and guidelines are provided for percentage contingency in each category. It should be noted that contingency, as used in this analysis, does not account for price escalation and inflation in the cost of decommissioning over the remaining operating life of the station.

The use and role of contingency within decommissioning estimates is not a "safety factor issue." Safety factors provide additional security and address situations that may never occur. Contingency funds are expected to be fully expended throughout the program. They also provide assurance that sufficient funding is available to accomplish the intended tasks. An estimate without contingency, or from which contingency has been removed, can disrupt the orderly progression of

events and jeopardize a successful conclusion to the decommissioning process.

For example, the most technologically challenging task in decommissioning a commercial nuclear station is the disposition of the reactor vessel and internal components, now highly radioactive after a lifetime of exposure to core activity. The disposition of these components forms the basis of the critical path (schedule) for decommissioning operations. Cost and schedule are interdependent, and any deviation in schedule has a significant impact on cost for performing a specific activity.

Disposition of the reactor vessel internals involves the underwater cutting of complex components that are highly radioactive. Costs are based upon optimum segmentation, handling, and packaging scenarios. The schedule is primarily dependent upon the turnaround time for the heavily shielded shipping casks, including preparation, loading, and decontamination of the containers for transport. The number of casks required is a function of the pieces generated in the segmentation activity, a value calculated on optimum performance of the tooling employed in cutting the various subassemblies. The expected optimization, however, may not be achieved, resulting in delays and additional program costs. For this reason, contingency must be included to mitigate the consequences of the expected inefficiencies inherent in this complex activity, along with related concerns associated with the operation of highly specialized tooling, field conditions, and water clarity.

Contingency funds are an integral part of the total cost to complete the decommissioning process. For this study, TLG examined the major activity-related problems (decontamination, segmentation, equipment handling, packaging, transport, and waste disposal) that necessitate a contingency. Individual activity contingencies ranged from 10% to 75%, depending on the degree of difficulty judged to be appropriate from TLG's actual decommissioning experience. The contingency values used in this study are as follows:

- Decontamination 50%
- Contaminated Component Removal 25%
- Contaminated Component Packaging 10%
- Contaminated Component Transport 15%
- Low-Level Radioactive Waste Disposal 25%
- Waste Recycling/Recovery 15%

• Reactor Segmentation	75%
• NSSS Component Removal	25%
• Reactor Waste Packaging	25%
• Reactor Waste Transport	25%
• Reactor Vessel Component Disposal	50%
• GTCC Disposal	15%
• Non-Radioactive Component Removal	15%
• Heavy Equipment and Tooling	15%
• Supplies	25%
• Engineering	15%
• Energy	15%
• License Termination Survey	30%
• Construction	15%
• Taxes and Fees	10%
• Insurance	10%
• Staffing	15%

The contingency values are applied to the appropriate components of the estimates on a line item basis. A composite value is then reported at the end of each detailed estimate (as provided in Appendices C, D and E). For example, the composite contingency value reported for Scenario 3 is approximately 17.9%.

3.3.2 Financial Risk

In addition to the routine uncertainties addressed by contingency, another cost element that is sometimes necessary to consider when bounding decommissioning costs relates to uncertainty, or risk. Examples can include changes in work scope, pricing, job performance, and other variations that could conceivably, but not necessarily, occur. Consideration is sometimes necessary to generate a level of confidence in the estimate, within a range of probabilities. TLG considers these types of costs under the broad term "financial risk." Included within the category of financial risk are:

- Transition activities and costs: ancillary expenses associated with eliminating 50% to 80% of the site labor force shortly after the cessation of plant operations, added cost for worker separation packages throughout the decommissioning program, national or

company-mandated retraining, and retention incentives for key personnel.

- Delays in approval of the decommissioning plan due to intervention, legal challenges, and national and local hearings.
- Changes in the project work scope from the baseline estimate, involving the discovery of unexpected levels of contaminants, contamination in places not previously expected, contaminated soil previously undiscovered (either radioactive or hazardous material contamination), variations in plant inventory or configuration not indicated by the as-built drawings.
- Regulatory changes (e.g., affecting worker health and safety, site release criteria, waste transportation, and disposal).
- Policy decisions altering national commitments (e.g., in the ability to accommodate certain waste forms for disposition, or in the timetable for such, or the start and rate of acceptance of spent fuel by the DOE).
- Pricing changes for basic inputs, such as labor, energy, materials, and waste disposal.

This cost study does not add any additional costs to the estimates for financial risk, since there is insufficient historical data from which to project future liabilities. Consequently, the areas of uncertainty or risk are revisited periodically and addressed through repeated revisions or updates of the base estimates.

3.4 SITE-SPECIFIC CONSIDERATIONS

There are a number of site-specific considerations that affect the method for dismantling and removal of equipment from the site and the degree of restoration required. The cost impacts of the considerations identified below are included with the estimates.

3.4.1 Spent Fuel Disposition

The cost to dispose the spent fuel generated from plant operations is not reflected within the estimates to decommission Vermont Yankee. Ultimate disposition of the spent fuel is within the province of the DOE's Waste Management System, as defined by the Nuclear Waste Policy Act (the disposal cost is financed by a 1 mill/kWhr surcharge paid into the DOE's waste fund during operations). However, the NRC requires licensees to establish a program to manage and provide funding for the

management of all irradiated fuel at the reactor until title of the fuel is transferred to the Secretary of Energy. This requirement is prepared for through inclusion of certain high-level waste cost elements within the estimates, as described below.

Spent Fuel Management Model

Completion of the decommissioning process is dependent upon the DOE's ability to remove spent fuel from the site. DOE's repository program assumes that spent fuel is accepted for disposal from the nation's commercial nuclear plants in the order (the "queue") in which it was removed from service ("oldest fuel first").[25] In Scenarios 1, 3 and 5, the timing for removal of spent fuel from the site is based upon the DOE's most recently published annual acceptance rates of 400 MTU/year for year 1, 600 MTU/year for year 2, 1200 MTU/year for year 3, 2000 MTU/year for year 4, and 3000 MTU/year for year 5 and beyond.[26] In Scenarios 2, 4 and 6, the same pickup schedules are deferred into future years so that removal of the last assemblies coincides with the 2082 milestone.

As shown below, the six scenarios evaluate a combination of shutdown dates (scheduled and original), decommissioning alternative (prompt or deferred), and expectations of the DOE's performance in transferring spent fuel from the site to a federal repository (EntergyVY vs. Vermont Department of Public Service).

Scenario	Shutdown (year)	Option	1st Spent Fuel Assembly Pickup (year)	Last Spent Fuel Assembly Pickup (year)
1	2012	SAFSTOR	2021	2045
2	2012	SAFSTOR	2058	2082
3	2032	DECON	2021	2060
4	2032	DECON	2042	2082
5	2032	SAFSTOR	2021	2060
6	2032	SAFSTOR	2042	2082

ISFSI

An ISFSI has been constructed within the protected area (PA) to support continued plant operations. The ISFSI has a capacity of 36 dry storage modules. As such, under the current assumptions for DOE performance, a

second ISFSI will be required to completely off-load the spent fuel pool at the cessation of plant operations.

Construction, operation and maintenance costs for the ISFSI are included within the estimates and address the costs for staffing the facility, as well as security, insurance, taxes and licensing fees. The estimates include the costs to purchase, load, and transfer the multi-purpose spent fuel storage canisters (MPCs) from the pool to the DOE or to/from the ISFSI. Costs are also provided for the final disposition of the facilities once the transfer is complete.

Storage Canister Design

The design and capacity of the ISFSI is based upon the Holtec HI-STORM 100S dry cask storage system. The system consists of a MPC with a nominal capacity of 68 fuel assemblies and a concrete storage overpack. For fuel transferred directly from the pool to the DOE, for purposes of this estimate only, the DOE was assumed to provide Transport, Aging and Disposal (TAD) canisters with a 44 assembly capacity. DOE has not identified any cask systems it may use.

Spent Fuel Campaigns

The MPCs are loaded during an annual campaign. The campaigns include both fixed and variable costs, as well as the cost of the dry storage systems. Fixed costs include the equipment needed to support the loading of the MPCs, engineering services, laboratory services and personnel training services. Variable costs include those associated with the length of the campaign, e.g., contractor services and radiation protection services, and those associated with the number of MPCs to be loaded, e.g., welding services.

The campaigns costs for the 2012 shutdown scenarios also include the costs for the equipment and modifications to the technical specifications for the design change from vacuum drying to forced helium drying as well as for the amendment to the certificate of compliance needed for GE's enhanced design GNF2 fuel. The 2032 scenarios assume that such modifications have been made prior to final shutdown.

Operations and Maintenance

At shutdown, the spent fuel pool is expected to contain freshly discharged assemblies (from the most recent refueling cycles). Over the

next five and one-half years the assemblies are packaged into MPCs for transfer to the ISFSI or in TADs for transfer to a DOE facility. It is assumed that the five and one-half years also provides the necessary cooling period for the final core to meet DOE's transport system requirements for decay heat and/or the dry cask storage vendor's system. Once the pool is emptied, the spent fuel storage and handling facilities are available for decommissioning or readied for long-term storage, as required by the decommissioning scenario.

Costs are included for operation and maintenance of the spent fuel pool during the first five and one-half years as well as the ISFSI. ISFSI operating durations are based upon the previously stated assumptions on fuel transfer expectations for the various scenarios.

ISFSI Design Considerations

A multi-purpose (storage and transport) dry shielded storage canister with a vertical, reinforced concrete storage over pack is used as a basis for this cost analysis. The overpacks are assumed to have some level of neutron-induced activation as a result of the long-term storage of the fuel, i.e., to levels exceeding free-release limits. The cost of the disposition of this material, as well as the demolition of the ISFSI facility, is included in the estimates.

GTCC

The dismantling of the reactor internals generates radioactive waste considered unsuitable for shallow land disposal (i.e., low-level radioactive waste with concentrations of radionuclides that exceed the limits established by the NRC for Class C radioactive waste (GTCC)). The Low-Level Radioactive Waste Policy Amendments Act of 1985 assigned the Federal Government the responsibility for the disposal of this material. The Act also stated that the beneficiaries of the activities resulting in the generation of such radioactive waste bear all reasonable costs of disposing of such waste. However, to date, the Federal Government has not identified a cost for disposing of GTCC or a schedule for acceptance. As such, the estimates to decommission Vermont Yankee include an allowance for the disposition of GTCC material.

For purposes of this study, GTCC is packaged in the same canisters used to store spent fuel. It is assumed that the DOE would not accept this waste prior to completing the transfer of spent fuel. Therefore, until

such time the DOE is ready to accept GTCC waste, it is reasonable to assume that this material remains in storage with the spent fuel at the ISFSI (for the DECON alternative). In the SAFSTOR scenarios (with the exception of Scenario 2), the GTCC material is shipped directly to a DOE facility as it is generated (since the fuel has been removed from the site prior to the start of decommissioning and the ISFSI deactivated). Scenario 2 relies upon the DECON ISFSI assumptions.

3.4.2 Reactor Vessel and Internal Components

The reactor pressure vessel and reactor internal components are segmented for disposal in shielded transportation casks. Segmentation and packaging of the internals are performed in the dryer-separator pool where a turntable and remote cutter are installed. The vessel is segmented in place using a mast-mounted cutter supported off the lower head and directed from a shielded work platform installed overhead in the reactor well. Transportation cask specifications and Department of Transportation (DOT) regulations dictate segmentation and packaging methodology (i.e., packaging will meet the current physical and radiological limitations and regulations). Cask shipments are made in DOT-approved, currently available truck casks.

As stated previously, the dismantling of reactor internals at Vermont Yankee will generate radioactive waste considered unsuitable for shallow land disposal (i.e., GTCC). Although the material is not classified as high-level waste, DOE has indicated it will accept title to this waste for disposal at the future high-level waste repository.[27] However, the DOE has not been forthcoming with an acceptance criteria or disposition schedule for this material, and numerous questions remain as to the ultimate disposal cost and waste form requirements. As such, for purposes of this study, the GTCC radioactive waste has been assumed to be packaged and disposed of as high-level waste, at a cost equivalent to that envisioned for the spent fuel.

Intact disposal of the reactor vessel and internal components can provide savings in cost and worker exposure by eliminating the complex segmentation requirements, isolation of the GTCC material, and transport/storage of the resulting waste packages. Portland General Electric (PGE) was able to dispose of the Trojan reactor as an intact package. However, the location of the Trojan Nuclear Plant on the Columbia River simplified the transportation analysis since:

- the reactor package could be secured to the transport vehicle for the entire journey, i.e., the package was not lifted during transport,
- there were no man-made or natural terrain features between the plant site and the disposal location that could produce a large drop, and,
- transport speeds were very low, limited by the overland transport vehicle and the river barge.

As a member of the Northwest Compact, PGE had a site available for disposal of the package, the US Ecology facility in Washington State. The characteristics of this arid site proved favorable in demonstrating compliance with land disposal regulations.

It is not known whether intact disposal will be available when Vermont Yankee ceases operation. Future viability of this option will depend upon a detailed analysis of the feasibility and economics of moving such a large package to a distant and remote location such as western Texas. Consequently, this study assumes the reactor vessel will be segmented, as a bounding condition.

3.4.3 Primary System Components

The reactor and reactor recirculation system components are assumed to be decontaminated using chemical agents prior to the start of cutting operations. Decontamination can be expected to have a significant ALARA impact in the DECON scenarios, since the removal work is done within the first few years of shutdown. It should be noted that if the decommissioning work is significantly delayed, chemical decontamination might not be necessary (and is not assumed for the SAFSTOR scenarios). A decontamination factor (average reduction) of 10 is assumed for the process. Disposal of the decontamination solution effluent is included within the estimate as a "process liquid waste" charge.

Reactor recirculation piping is cut from the reactor vessel once the water level in the vessel (used for personnel shielding during dismantling and cutting operations in and around the vessel) drops below the nozzle zone. The piping is boxed and shipped by shielded van. The reactor recirculation pumps and motors are lifted out intact, packaged, and transported for processing or disposal.

3.4.4 Main Turbine and Condenser

The main turbine is dismantled using conventional maintenance procedures. The turbine rotors and shafts are removed to a laydown area. The lower turbine casings are removed from their anchors by controlled demolition. The main condensers are also disassembled and moved to a laydown area. Material is then prepared for transportation to an off-site recycling facility where it will be surveyed and designated for either decontamination or volume reduction, conventional disposal, or controlled disposal. Components are packaged and readied for transport in accordance with the intended disposition.

3.4.5 Transportation Methods

It is expected that most of the contaminated piping, components, and structural material, other than the highly activated reactor vessel and internal components, will qualify as LSA-I, II or III or Surface Contaminated Object, SCO-I or II, as described in Title 49 of the Code of Federal Regulations.[28] The contaminated material is packaged in Industrial Packages (IP-1, IP-2, or IP-3, as defined in subpart 173.411) for transport unless demonstrated to qualify as their own shipping containers. The reactor vessel and internal components are expected to be transported in accordance with 10 CFR Part 71, in Type B containers. It is conceivable that the reactor may qualify as LSA II or III. However, the high radiation levels on the outer surface would require that additional shielding be incorporated within the packaging so as to attenuate the dose to levels acceptable for transport.

Any fuel cladding failure that occurred during the lifetime of the plant is assumed to have released fission products at sufficiently low levels that the buildup of long-lived isotopes (e.g., ^{137}Cs, ^{90}Sr, or transuranics) has not reached levels exceeding those that permit the major reactor components to be shipped under current transportation regulations and disposal requirements.

Transport of the highly activated metal, produced in the segmentation of the reactor vessel and internal components, is by shielded truck cask. Cask shipments may exceed 95,000 pounds, including vessel segment(s), supplementary shielding, cask tie-downs, and tractor-trailer. The maximum level of activity per shipment assumed permissible is based upon the license limits of the available shielded transport casks. The segmentation scheme for the vessel and internal segments is designed to meet these limits.

The transport of large intact components (e.g., large heat exchangers and other oversized components), will be by a combination of truck and/or multi-wheeled transporters.

Transportation costs for the low-level radioactive waste generated by the decontamination and dismantling activities are based upon the mileage to the waste disposal facilities in Utah and Texas and the waste processing facilities in Tennessee. Truck transport costs were developed from published tariffs from Tri-State Motor Transit.[29]

3.4.6 Low-Level Radioactive Waste Conditioning and Disposal

To the greatest extent practical, metallic material generated in the decontamination and dismantling processes is processed to reduce the total cost of controlled disposal. Material meeting the regulatory and/or site release criterion, is released as scrap, requiring no further cost consideration. Conditioning (preparing the material to meet the waste acceptance criteria at the disposal site) and recovery of the waste stream is performed at an off-site facility.

The mass of radioactive waste generated during the various decommissioning activities is reported by line-item in Appendices C, D and E, and summarized in Section 5. The Section 5 waste summaries are consistent with 10 CFR Part 61 classifications. Commercially-available steel containers are used for the disposal of piping, small components, and concrete. Larger components can serve as their own containers, with proper closure of all openings, access ways, and penetrations. The waste volumes are calculated on the exterior package dimensions for containerized material or a dimensional calculation for components serving as their own waste containers.

The more highly activated reactor components are transported in reusable, shielded truck casks with disposable liners. In calculating disposal costs, the burial fees are applied against the liner volume, with surcharges added for the special handling requirements and the radiological characteristics of the payload. Packaging efficiencies are lower for the highly activated materials (greater than Class A waste), where high concentrations of gamma-emitting radionuclides limit the capacity of the shipping canisters.

Disposal fees are calculated using current disposal agreements, with surcharges added for the highly activated components, for example, generated in the segmentation of the reactor vessel. The cost to dispose

of the majority of the material generated from the decontamination and dismantling activities is based upon Entergy VY's current cost for disposal at Energy*Solutions*' facility in Clive, Utah. Interim disposal rates set by the Executive Director of the TCEQ were used for the higher activity waste (Class B and C) designated for disposal at Waste Control Specialist's Andrews County facility.

Duratek's facility in Oak Ridge, Tennessee and Studsvik's facility in Memphis, Tennessee were used for recycling and processing very low-level metallic waste or material suspected to be contaminated.

3.4.7 Site Remediation

The current analysis revisited the requirements for site remediation, based upon the records maintained by the plant (i.e., in accordance with 10 CFR 50.75(g)) for radiological incidents and design information on underground services, e.g., piping, electrical duct banks and cabling.

Contaminated Soil

The volume of soil to be removed for controlled disposal was estimated for specific areas of concern. Approximately 854 cubic yards was calculated as required to envelope the specific areas of concern. The volume would be expected to decrease with time and the natural decay of the radionuclides; however, for this analysis, no downward adjustment was made.

An additional 4,434 cubic yards of soil (10% of the total volume from the excavation of underground piping and site services) was designated for controlled disposal, as an allowance.

It should be noted that no additional remediation of the soil in the vicinity of the AOG building was included, based upon the earlier remediation (soil removal) performed by Entergy VY and the findings from the GZA groundwater investigation that only tritium had migrated into the groundwater.[30]

Tritium is a low-energy beta emitter with a half-life of approximately 12.3 years, decaying to non-radioactive helium. As such, any residual sub-grade tritium is not expected to require any further remediation at the time of decommissioning in order to meet site release criteria.

Disposition of Underground Piping and Site Services

The disposition of underground piping and site services was based upon the information compiled in the Vermont Yankee "Buried Piping and Tanks Inspection and Monitoring Program" and associated construction drawings to identify those system components located below grade. In instances where excavation was required for access to the components, the site work was added to the estimate. In general, contaminated small bore piping was designated for direct disposal while larger piping was sent to an off-site processor for decontamination, volume reduction or release.

A significant amount of the below grade piping is located around the perimeter of the plant. For purposes of the cost estimate, this area was assumed to be excavated to an average depth of four feet to expose the piping, duct banks, any near-surface grounding grid, etc.

The overburden was assumed to be surveyed and stockpiled on site for future use in backfilling the below grade voids. Approximately 10 percent of the volume (estimating allowance) was assumed to require off-site disposal and included within the Contaminated Soil volume.

Steel and transite piping was assumed to be removed. Large non-contaminated concrete piping, located at a depth of less than 20 feet, was assumed to be excavated, breeched and backfilled. Large non-contaminated concrete piping, located at a depth greater than 20 feet was abandoned in place (with access ways sealed).

In addition to the plant perimeter, the cost model includes excavation of other targeted areas, including the north and south septic fields.

3.4.8 Site Conditions Following Decommissioning

The NRC will terminate (or amend) the site license if it determines that site remediation has been performed in accordance with the license termination plan, and that the terminal radiation survey and associated documentation demonstrate that the facility is suitable for release. The NRC's involvement in the decommissioning process ends at this point. Building codes and state environmental regulations dictate the next step in the decommissioning process, as well as the owner's own future plans for the site.

Only existing site structures are considered in the dismantling cost. The electrical switchyard remains after Vermont Yankee is decommissioned in support of the regional transmission and distribution system. The disposition or ongoing maintenance costs of the off-site corporate offices, Governor Hunt House and Plant Support Building are not included in the estimates. Structures are removed to a nominal depth of three feet below grade. The voids are backfilled with clean debris and capped with soil. The site is then re-graded to conform to the adjacent landscape. Vegetation is established to inhibit erosion. These "non-radiological costs" are included in the total cost of decommissioning.

Asphalt surfaces in the immediate vicinity of site buildings are broken up and the material used for fill, as required. The site access road remains in place.

The rubble produced in the demolition and dismantling of the structures is processed to remove the steel rebar and then shipped off-site for further processing (e.g., to recover the aggregate). The process material was not used on-site for backfill (as was assumed in the 2006 cost estimate).

3.5 ASSUMPTIONS

The following assumptions were made in the development of the estimates for decommissioning the Vermont Yankee unit.

3.5.1 Estimating Basis

Decommissioning costs are reported in the year of projected expenditure; however, the values are provided in 2011 dollars. Costs are not inflated, escalated, or discounted over the periods of performance.

The estimates rely upon the physical plant inventory that was the basis for the 2006 analysis (updated to reflect any significant changes to the plant over the past five years).

The study follows the principles of ALARA through the use of work duration adjustment factors. These factors address the impact of activities such as radiological protection instruction, mock-up training, and the use of respiratory protection and protective clothing. The factors lengthen a task's duration, increasing costs and lengthening the overall schedule. ALARA planning is considered in the costs for engineering and planning, and in the development of activity specifications and detailed

procedures. Changes to worker exposure limits may impact the decommissioning cost and project schedule.

3.5.2 Labor Costs

Entergy VY will manage the decontamination and dismantling of the nuclear unit in addition to maintaining site security, radiological health and safety, quality assurance and overall site administration during the decommissioning. A Decommissioning Operations Contractor (DOC) will provide the supervisory staff needed to oversee the labor subcontractors, consultants, and specialty contractors engaged to perform the field work associated with the decontamination and dismantling efforts.

Personnel costs are based upon average salary information provided by Entergy VY for the site. Overhead costs are included for site and corporate support, reduced commensurate with the staffing levels envisioned for the project.

Severance and retention costs are not included in the estimates. Reduction in the operating organization is assumed to be handled through normal staffing processes (e.g., reassignment and outplacement).

The craft labor required to decontaminate and dismantle the nuclear unit is acquired through standard site contracting practices. The current cost of site labor is used as an estimating basis.

Security, while reduced from operating levels, is maintained throughout the decommissioning for access control, material control, and to safeguard the spent fuel.

3.5.3 Design Conditions

Activation levels in the vessel and internal components are modeled using NUREG/CR-3474.[31] Estimates are derived from the curie/gram values contained therein and adjusted for the different mass of the Vermont Yankee components, projected operating life(s), and different periods of decay. Additional short-lived isotopes were derived from NUREG/CR-0130[32] and NUREG/CR-0672,[33] and benchmarked to the long-lived values from NUREG/CR-3474.

The disposal cost for the control blades removed from the vessel with the final core load is included within the estimates. Disposition of any

blades stored in the pools from operations is considered an operating expense and therefore not accounted for in the decommissioning estimates.

Activation of the reactor building structures is assumed to be confined to the area around the sacrificial shield.

3.5.4 General

Transition Activities

Existing warehouses are cleared of non-essential material and remain for use by Entergy VY and its subcontractors. The plant's operating staff performs the following activities at no additional cost or credit to the project during the transition period.

- Drain and collect fuel oils, lubricating oils, and transformer oils for recycle and/or sale.
- Drain and collect acids, caustics, and other chemical stores for recycle and/or sale.
- Process operating waste inventories. Disposal of operating wastes (e.g., filtration media, charcoal, resins) during this initial period is not considered a decommissioning expense; however, the estimates do include the disposition of the retired low-pressure turbine rotors currently in storage, and some small volumes of mixed waste solvents, battery acid, and the condensate and reactor water cleanup resins currently in storage.

Scrap and Salvage

The existing plant equipment is assumed to be obsolete and suitable for scrap as deadweight quantities only. Entergy VY will make economically reasonable efforts to salvage equipment following final plant shutdown. However, dismantling techniques assumed by TLG for equipment in this analysis are not consistent with removal techniques required for salvage (resale) of equipment. Experience has indicated that buyers prefer equipment stripped down to very specific requirements before they would consider purchase. This can require expensive rework after the equipment had been removed from its installed location. Since placing salvage value on this machinery and equipment would be speculative, this analysis does not attempt to quantify the value that an owner may realize based upon those efforts.

It is assumed, for purposes of this analysis, that any value received from the sale of scrap generated in the dismantling process would be more than offset by the on-site processing costs. The dismantling techniques assumed in the decommissioning estimates do not include the additional cost for size reduction and preparation to meet "furnace ready" conditions. With a volatile market, the potential profit margin in scrap recovery is highly speculative, regardless of the ability to free release this material.

Furniture, tools, mobile equipment such as forklifts, trucks, bulldozers, and other property is removed at no cost or credit to the decommissioning project. Disposition may include relocation to other facilities. Spare parts are made available for alternative use.

Energy

For estimating purposes, the plant is assumed to be de-energized, with the exception of those facilities associated with spent fuel storage (temporary power is run throughout the plant, as needed). Replacement power costs are used to calculate the cost of energy consumed during decommissioning for tooling, lighting, ventilation, and essential services.

Insurance

Costs for continuing coverage (nuclear liability and property insurance) following cessation of plant operations and during decommissioning are included and based upon current operating premiums. Reductions in premiums, throughout the decommissioning process, are consistent with the guidance and the limits for coverage defined in the NRC's proposed rulemaking "Financial Protection Requirements for Permanently Shutdown Nuclear Power Reactors."[34] The NRC's financial protection requirements are based on various reactor (and spent fuel) configurations.

Property Tax

Entergy VY currently pays taxes to the state based upon annual megawatts generated (generation tax). Under the current law, payments cease once the plant is permanently shutdown.

Local property taxes are paid in accordance with a Tax Stabilization Agreement with the Town of Vernon. The agreement is only valid during the operating life of the plant. Once shutdown, local property taxes

would most likely be assessed at the fair market value of the property under normal property tax rules. However, there are no specific provisions for determining the value of a shutdown unit (and significant remediation project), if any.

Therefore, for purposes of this cost analysis, the decommissioning estimates include an allowance for post-operation tax payments with the assumption that the property would be assessed as vacant land.

Site Modifications

The perimeter fence and in-plant security barriers are assumed to be moved, as appropriate, to conform to the site security plan in force during the various stages of the project.

3.6 COST ESTIMATE SUMMARY

Summaries of the decommissioning costs and annual expenditures are provided in Tables 3.1 through 3.6. The schedules are based upon the costs reported in Appendix C for the 2012 SAFSTOR scenarios, Appendix D for the 2032 DECON scenarios and Appendix E for the 2032 SAFSTOR scenarios.

As discussed in Section 3.4.1, it is assumed that the DOE would not accept the GTCC waste prior to completing the transfer of spent fuel. Therefore, for the DECON scenario, GTCC disposal is shown in the final year of ISFSI operation. In SAFSTOR (with the exception of Scenario 2), the fuel is removed prior to the start of reactor vessel dismantling. The disposal of the GTCC in Scenarios 4 and 6 assumed to be concurrent with the disposal of the other reactor internals. While designated for disposal at the geologic repository along with the spent fuel, GTCC waste is still classified as low-level radioactive waste and, as such, included as a “License Termination” expense. In Scenario 2, since ISFSI operations extend beyond decommissioning, GTCC disposal is shown in the final year of ISFSI operation.

TABLE 3.1
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 1, 2012 SHUTDOWN, SAFSTOR, SPENT FUEL OFF-SITE 2045
(thousands, 2011 dollars)

Year	Labor	Equipment & Materials	Energy	Waste Disposal	Other	Total
2012	35,254	14,783	1,057	44	14,269	65,407
2013	42,950	27,614	1,050	5,549	26,991	104,154
2014	14,033	12,146	270	21	8,222	34,692
2015	14,033	12,146	270	21	8,222	34,692
2016	14,072	12,179	271	21	8,244	34,787
2017	11,347	8,763	231	42	6,349	26,733
2018	4,696	387	135	95	1,711	7,024
2019	4,696	387	135	95	1,711	7,024
2020	4,708	388	135	95	1,716	7,043
2021	4,839	818	135	95	1,711	7,599
2022	4,696	387	135	95	1,711	7,024
2023	4,782	646	135	95	1,711	7,369
2024	4,823	733	135	95	1,716	7,503
2025	4,811	732	135	95	1,711	7,484
2026	4,782	646	135	95	1,711	7,369
2027	4,753	560	135	95	1,711	7,254
2028	4,766	561	135	95	1,716	7,273
2029	4,753	560	135	95	1,711	7,254
2030	4,753	560	135	95	1,711	7,254
2031	4,753	560	135	95	1,711	7,254
2032	4,737	474	135	95	1,716	7,158
2033	4,753	560	135	95	1,711	7,254
2034	4,753	560	135	95	1,711	7,254
2035	4,696	387	135	95	1,711	7,024
2036	4,737	474	135	95	1,716	7,158
2037	4,724	473	135	95	1,711	7,139
2038	4,782	646	135	95	1,711	7,369
2039	4,724	473	135	95	1,711	7,139
2040	4,766	561	135	95	1,716	7,273
2041	4,753	560	135	95	1,711	7,254
2042	4,753	560	135	95	1,711	7,254
2043	4,753	560	135	95	1,711	7,254
2044	4,737	474	135	95	1,716	7,158
2045	4,889	991	135	94	1,710	7,818

TABLE 3.1 (continued)
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 1, 2012 SHUTDOWN, SAFSTOR, SPENT FUEL OFF-SITE 2045
(thousands, 2011 dollars)

Year	Labor	Equipment & Materials	Energy	Waste Disposal	Other	Total
2046	1,829	264	135	9	1,094	3,332
2047	1,829	264	135	9	1,094	3,332
2048	1,834	265	135	9	1,097	3,341
2049	1,829	264	135	9	1,094	3,332
2050	1,829	264	135	9	1,094	3,332
2051	1,829	264	135	9	1,094	3,332
2052	1,834	265	135	9	1,097	3,341
2053	1,829	264	135	9	1,094	3,332
2054	1,829	264	135	9	1,094	3,332
2055	1,829	264	135	9	1,094	3,332
2056	1,834	265	135	9	1,097	3,341
2057	1,829	264	135	9	1,094	3,332
2058	1,829	264	135	9	1,094	3,332
2059	1,829	264	135	9	1,094	3,332
2060	1,834	265	135	9	1,097	3,341
2061	1,829	264	135	9	1,094	3,332
2062	1,829	264	135	9	1,094	3,332
2063	1,829	264	135	9	1,094	3,332
2064	1,834	265	135	9	1,097	3,341
2065	1,829	264	135	9	1,094	3,332
2066	26,397	1,093	1,060	39	2,648	31,236
2067	44,047	9,577	1,332	5,931	5,557	66,444
2068	48,108	19,106	1,285	23,187	12,195	103,880
2069	43,286	5,319	1,017	12,590	9,460	71,672
2070	43,194	5,050	1,012	12,384	9,408	71,048
2071	35,725	3,371	625	5,960	5,675	51,357
2072	22,405	7,967	165	9	1,474	32,021
2073	14,733	6,933	97	0	901	22,664
Total	579,358	167,009	16,219	68,637	189,468	1,020,692

TABLE 3.2
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 2, 2012 SHUTDOWN, SAFSTOR, SPENT FUEL OFF-SITE 2082
(thousands, 2011 dollars)

Year	Labor	Equipment & Materials	Energy	Waste Disposal	Other	Total
2012	35,254	14,783	1,057	44	14,269	65,407
2013	42,950	27,614	1,050	5,549	26,991	104,154
2014	14,033	12,146	270	21	8,222	34,692
2015	14,033	12,146	270	21	8,222	34,692
2016	14,072	12,179	271	21	8,244	34,787
2017	11,342	8,758	231	32	6,350	26,714
2018	4,610	307	135	59	1,715	6,827
2019	4,610	307	135	59	1,715	6,827
2020	4,623	308	135	60	1,720	6,846
2021	4,610	307	135	59	1,715	6,827
2022	4,610	307	135	59	1,715	6,827
2023	4,610	307	135	59	1,715	6,827
2024	4,623	308	135	60	1,720	6,846
2025	4,610	307	135	59	1,715	6,827
2026	4,610	307	135	59	1,715	6,827
2027	4,610	307	135	59	1,715	6,827
2028	4,623	308	135	60	1,720	6,846
2029	4,610	307	135	59	1,715	6,827
2030	4,610	307	135	59	1,715	6,827
2031	4,610	307	135	59	1,715	6,827
2032	4,623	308	135	60	1,720	6,846
2033	4,610	307	135	59	1,715	6,827
2034	4,610	307	135	59	1,715	6,827
2035	4,610	307	135	59	1,715	6,827
2036	4,623	308	135	60	1,720	6,846
2037	4,610	307	135	59	1,715	6,827
2038	4,610	307	135	59	1,715	6,827
2039	4,610	307	135	59	1,715	6,827
2040	4,623	308	135	60	1,720	6,846
2041	4,610	307	135	59	1,715	6,827
2042	4,610	307	135	59	1,715	6,827
2043	4,610	307	135	59	1,715	6,827
2044	4,623	308	135	60	1,720	6,846
2045	4,610	307	135	59	1,715	6,827

TABLE 3.2 (continued)
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 2, 2012 SHUTDOWN, SAFSTOR, SPENT FUEL OFF-SITE 2082
(thousands, 2011 dollars)

Year	Labor	Equipment & Materials	Energy	Waste Disposal	Other	Total
2046	4,610	307	135	59	1,715	6,827
2047	4,610	307	135	59	1,715	6,827
2048	6,923	308	135	60	1,720	9,146
2049	4,610	307	135	59	1,715	6,827
2050	4,610	307	135	59	1,715	6,827
2051	4,610	307	135	59	1,715	6,827
2052	4,623	308	135	60	1,720	6,846
2053	4,610	307	135	59	1,715	6,827
2054	4,610	307	135	59	1,715	6,827
2055	4,610	307	135	59	1,715	6,827
2056	4,623	308	135	60	1,720	6,846
2057	5,645	3,411	135	59	1,715	10,965
2058	4,754	739	135	59	1,715	7,402
2059	4,610	307	135	59	1,715	6,827
2060	4,709	567	135	60	1,720	7,191
2061	4,725	652	135	59	1,715	7,287
2062	4,725	652	135	59	1,715	7,287
2063	4,697	566	135	59	1,715	7,172
2064	4,681	481	135	60	1,720	7,076
2065	4,668	480	135	59	1,715	7,057
2066	28,173	1,358	1,060	50	3,177	33,819
2067	45,501	10,160	1,332	5,931	4,927	67,851
2068	49,565	20,893	1,285	23,187	8,248	103,178
2069	44,717	5,476	1,017	12,553	9,275	73,038
2070	44,625	5,176	1,012	12,346	9,295	72,454
2071	37,398	3,494	625	5,942	6,133	53,592
2072	23,704	7,822	165	9	2,571	34,271
2073	16,495	6,776	97	0	2,176	25,544
2074	3,407	89	0	0	1,656	5,151
2075	3,464	261	0	0	1,656	5,381
2076	3,416	89	0	0	1,660	5,165
2077	3,435	175	0	0	1,656	5,266
2078	3,435	175	0	0	1,656	5,266
2079	3,435	175	0	0	1,656	5,266

TABLE 3.2 (continued)
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 2, 2012 SHUTDOWN, SAFSTOR, SPENT FUEL OFF-SITE 2082
(thousands, 2011 dollars)

Year	Labor	Equipment & Materials	Energy	Waste Disposal	Other	Total
2080	3,445	175	0	0	1,660	5,280
2081	3,407	89	0	0	1,656	5,151
2082	3,573	1,158	0	1	7,332	12,064
2083	1,700	714	0	93	2,065	4,571
Total	680,026	171,739	16,219	68,654	223,121	1,159,759

TABLE 3.3
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 3, 2032 SHUTDOWN, DECON, SPENT FUEL OFF-SITE 2060
(thousands, 2011 dollars)

Year	Labor	Equipment & Materials	Energy	Waste Disposal	Other	Total
2032	43,270	8,982	1,057	44	14,465	67,818
2033	62,016	23,666	2,014	14,527	28,243	130,466
2034	60,034	30,959	1,281	33,368	15,241	140,882
2035	55,823	18,873	1,067	17,531	14,089	107,384
2036	54,883	15,791	1,014	13,472	13,830	98,991
2037	48,649	12,385	876	12,891	11,519	86,320
2038	32,012	2,993	330	2,752	3,566	41,654
2039	23,192	9,726	135	0	2,356	35,409
2040	12,792	4,673	64	0	1,979	19,508
2041	3,355	234	0	0	1,626	5,215
2042	3,355	234	0	0	1,626	5,215
2043	3,355	234	0	0	1,626	5,215
2044	3,364	234	0	0	1,631	5,229
2045	3,297	61	0	0	1,626	4,985
2046	3,355	234	0	0	1,626	5,215
2047	3,355	234	0	0	1,626	5,215
2048	5,664	234	0	0	1,631	7,529
2049	3,326	147	0	0	1,626	5,100
2050	3,355	234	0	0	1,626	5,215
2051	3,355	234	0	0	1,626	5,215
2052	3,364	234	0	0	1,631	5,229
2053	3,355	234	0	0	1,626	5,215
2054	3,297	61	0	0	1,626	4,985
2055	3,355	234	0	0	1,626	5,215
2056	3,364	234	0	0	1,631	5,229
2057	3,355	234	0	0	1,626	5,215
2058	3,355	234	0	0	1,626	5,215
2059	3,326	147	0	0	1,626	5,100
2060	3,415	956	0	1	7,307	11,678
2061	1,702	715	0	93	2,056	4,566
Total	463,696	133,640	7,839	94,680	145,567	845,422

TABLE 3.4
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 4, 2032 SHUTDOWN, DECON, SPENT FUEL OFF-SITE 2082
(thousands, 2011 dollars)

Year	Labor	Equipment & Materials	Energy	Waste Disposal	Other	Total
2032	51,834	34,674	1,057	44	14,465	102,074
2033	63,031	26,711	2,014	14,527	28,243	134,526
2034	57,803	24,266	1,281	33,368	15,241	131,959
2035	54,452	14,761	1,067	17,531	14,089	101,901
2036	53,732	12,337	1,014	13,472	13,830	94,386
2037	47,820	9,898	876	12,891	11,519	83,004
2038	31,901	2,512	330	2,752	3,566	41,061
2039	23,135	9,407	135	0	2,356	35,033
2040	12,798	4,544	64	0	1,978	19,384
2041	3,364	114	0	0	1,625	5,102
2042	3,364	3,217	0	0	1,625	8,205
2043	3,507	467	0	0	1,625	5,599
2044	3,373	36	0	0	1,629	5,039
2045	3,450	295	0	0	1,625	5,369
2046	3,479	381	0	0	1,625	5,484
2047	3,479	381	0	0	1,625	5,484
2048	5,759	295	0	0	1,629	7,684
2049	3,421	208	0	0	1,625	5,254
2050	3,421	208	0	0	1,625	5,254
2051	3,421	208	0	0	1,625	5,254
2052	3,431	209	0	0	1,629	5,269
2053	3,421	208	0	0	1,625	5,254
2054	3,392	122	0	0	1,625	5,139
2055	3,421	208	0	0	1,625	5,254
2056	3,431	209	0	0	1,629	5,269
2057	3,364	36	0	0	1,625	5,024
2058	3,392	122	0	0	1,625	5,139
2059	3,392	122	0	0	1,625	5,139
2060	3,459	295	0	0	1,629	5,384
2061	3,421	208	0	0	1,625	5,254
2062	3,392	122	0	0	1,625	5,139
2063	3,421	208	0	0	1,625	5,254
2064	3,431	209	0	0	1,629	5,269
2065	3,421	208	0	0	1,625	5,254

TABLE 3.4 (continued)
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 4, 2032 SHUTDOWN, DECON, SPENT FUEL OFF-SITE 2082
(thousands, 2011 dollars)

Year	Labor	Equipment & Materials	Energy	Waste Disposal	Other	Total
2066	3,421	208	0	0	1,625	5,254
2067	3,364	36	0	0	1,625	5,024
2068	3,431	209	0	0	1,629	5,269
2069	3,421	208	0	0	1,625	5,254
2070	3,421	208	0	0	1,625	5,254
2071	3,392	122	0	0	1,625	5,139
2072	3,431	209	0	0	1,629	5,269
2073	3,421	208	0	0	1,625	5,254
2074	3,421	208	0	0	1,625	5,254
2075	3,421	208	0	0	1,625	5,254
2076	3,373	36	0	0	1,629	5,039
2077	3,421	208	0	0	1,625	5,254
2078	3,421	208	0	0	1,625	5,254
2079	3,421	208	0	0	1,625	5,254
2080	3,431	209	0	0	1,629	5,269
2081	3,392	122	0	0	1,625	5,139
2082	3,500	1,015	0	1	7,300	11,816
2083	1,702	715	0	93	2,056	4,566
Total	544,143	151,960	7,839	94,680	181,298	979,919

TABLE 3.5
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 5, 2032 SHUTDOWN, SAFSTOR, SPENT FUEL OFF-SITE 2060
(thousands, 2011 dollars)

Year	Labor	Equipment & Materials	Energy	Waste Disposal	Other	Total
2032	32,453	7,080	1,057	44	14,269	54,903
2033	39,301	17,485	1,050	5,549	26,991	90,377
2034	13,591	11,443	270	21	8,222	33,547
2035	13,591	11,443	270	21	8,222	33,547
2036	13,628	11,475	271	21	8,244	33,639
2037	11,001	8,253	231	48	6,350	25,882
2038	4,573	612	135	113	1,714	7,147
2039	4,544	526	135	113	1,714	7,032
2040	4,528	441	135	113	1,719	6,936
2041	4,544	526	135	113	1,714	7,032
2042	4,544	526	135	113	1,714	7,032
2043	4,544	526	135	113	1,714	7,032
2044	4,557	527	135	113	1,719	7,051
2045	4,487	353	135	113	1,714	6,802
2046	4,544	526	135	113	1,714	7,032
2047	4,544	526	135	113	1,714	7,032
2048	6,857	527	135	113	1,719	9,351
2049	4,515	440	135	113	1,714	6,917
2050	4,544	526	135	113	1,714	7,032
2051	4,544	526	135	113	1,714	7,032
2052	4,557	527	135	113	1,719	7,051
2053	4,544	526	135	113	1,714	7,032
2054	4,487	353	135	113	1,714	6,802
2055	4,544	526	135	113	1,714	7,032
2056	4,557	527	135	113	1,719	7,051
2057	4,544	526	135	113	1,714	7,032
2058	4,544	526	135	113	1,714	7,032
2059	4,515	440	135	113	1,714	6,917
2060	4,607	699	135	113	1,717	7,271
2061	1,829	264	135	9	1,090	3,327
2062	1,829	264	135	9	1,090	3,327
2063	1,829	264	135	9	1,090	3,327
2064	1,834	265	135	9	1,093	3,336
2065	1,829	264	135	9	1,090	3,327

TABLE 3.5 (continued)
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 5, 2032 SHUTDOWN, SAFSTOR, SPENT FUEL OFF-SITE 2060
(thousands, 2011 dollars)

Year	Labor	Equipment & Materials	Energy	Waste Disposal	Other	Total
2066	1,829	264	135	9	1,090	3,327
2067	1,829	264	135	9	1,090	3,327
2068	1,834	265	135	9	1,093	3,336
2069	1,829	264	135	9	1,090	3,327
2070	1,829	264	135	9	1,090	3,327
2071	1,829	264	135	9	1,090	3,327
2072	1,834	265	135	9	1,093	3,336
2073	1,829	264	135	9	1,090	3,327
2074	1,829	264	135	9	1,090	3,327
2075	1,829	264	135	9	1,090	3,327
2076	1,834	265	135	9	1,093	3,336
2077	1,829	264	135	9	1,090	3,327
2078	1,829	264	135	9	1,090	3,327
2079	1,829	264	135	9	1,090	3,327
2080	1,834	265	135	9	1,093	3,336
2081	1,829	264	135	9	1,090	3,327
2082	1,829	264	135	9	1,090	3,327
2083	1,829	264	135	9	1,090	3,327
2084	1,834	265	135	9	1,093	3,336
2085	1,829	264	135	9	1,090	3,327
2086	26,397	1,093	1,060	39	2,647	31,235
2087	44,047	9,577	1,332	6,081	5,557	66,595
2088	48,108	19,106	1,285	23,781	12,195	104,474
2089	43,286	5,319	1,017	12,602	9,460	71,683
2090	43,194	5,050	1,012	12,384	9,408	71,048
2091	35,725	3,371	625	5,960	5,675	51,357
2092	22,405	7,967	165	9	1,474	32,021
2093	14,733	6,933	97	0	901	22,664
Total	553,985	143,955	16,219	69,389	186,334	969,883

TABLE 3.6
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 6, 2032 SHUTDOWN, SAFSTOR, SPENT FUEL OFF-SITE 2082
(thousands, 2011 dollars)

Year	Labor	Equipment & Materials	Energy	Waste Disposal	Other	Total
2032	41,017	32,772	1,057	44	14,269	89,159
2033	40,505	21,095	1,050	5,549	26,991	95,190
2034	12,041	6,793	270	21	8,222	27,347
2035	12,041	6,793	270	21	8,222	27,347
2036	12,074	6,811	271	21	8,244	27,422
2037	9,894	4,948	231	33	6,348	21,455
2038	4,505	312	135	63	1,707	6,722
2039	4,505	312	135	63	1,707	6,722
2040	4,518	313	135	63	1,711	6,740
2041	5,540	3,415	135	63	1,707	10,859
2042	4,505	312	135	63	1,707	6,722
2043	4,649	743	135	63	1,707	7,297
2044	4,518	313	135	63	1,711	6,740
2045	4,592	571	135	63	1,707	7,067
2046	4,620	657	135	63	1,707	7,182
2047	4,620	657	135	63	1,707	7,182
2048	6,904	572	135	63	1,711	9,385
2049	4,563	484	135	63	1,707	6,952
2050	4,563	484	135	63	1,707	6,952
2051	4,563	484	135	63	1,707	6,952
2052	4,575	486	135	63	1,711	6,970
2053	4,563	484	135	63	1,707	6,952
2054	4,534	398	135	63	1,707	6,837
2055	4,563	484	135	63	1,707	6,952
2056	4,575	486	135	63	1,711	6,970
2057	4,505	312	135	63	1,707	6,722
2058	4,534	398	135	63	1,707	6,837
2059	4,534	398	135	63	1,707	6,837
2060	4,604	572	135	63	1,711	7,085
2061	4,563	484	135	63	1,707	6,952
2062	4,534	398	135	63	1,707	6,837
2063	4,563	484	135	63	1,707	6,952
2064	4,575	486	135	63	1,711	6,970
2065	4,563	484	135	63	1,707	6,952

TABLE 3.6 (continued)
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 6, 2032 SHUTDOWN, SAFSTOR, SPENT FUEL OFF-SITE 2082
(thousands, 2011 dollars)

Year	Labor	Equipment & Materials	Energy	Waste Disposal	Other	Total
2066	4,563	484	135	63	1,707	6,952
2067	4,505	312	135	63	1,707	6,722
2068	4,575	486	135	63	1,711	6,970
2069	4,563	484	135	63	1,707	6,952
2070	4,563	484	135	63	1,707	6,952
2071	4,534	398	135	63	1,707	6,837
2072	4,575	486	135	63	1,711	6,970
2073	4,563	484	135	63	1,707	6,952
2074	4,563	484	135	63	1,707	6,952
2075	4,563	484	135	63	1,707	6,952
2076	4,518	313	135	63	1,711	6,740
2077	4,563	484	135	63	1,707	6,952
2078	4,563	484	135	63	1,707	6,952
2079	4,563	484	135	63	1,707	6,952
2080	4,575	486	135	63	1,711	6,970
2081	4,534	398	135	63	1,707	6,837
2082	4,641	743	135	63	1,705	7,287
2083	1,829	264	135	9	1,212	3,449
2084	1,834	265	135	9	1,215	3,459
2085	1,829	264	135	9	1,212	3,449
2086	26,397	1,093	1,060	39	2,676	31,264
2087	44,047	9,577	1,332	6,081	5,557	66,595
2088	48,108	19,106	1,285	23,781	12,195	104,474
2089	43,286	5,319	1,017	12,602	9,460	71,683
2090	43,194	5,050	1,012	12,384	9,408	71,048
2091	35,725	3,371	625	5,960	5,675	51,357
2092	22,405	7,967	165	9	1,474	32,021
2093	14,733	6,933	97	0	901	22,664
Total	619,432	162,389	16,219	69,407	200,126	1,067,573

4. SCHEDULE

The schedules for the decommissioning scenarios considered in this analysis follow the general sequence presented in the AIF/NESP-036 study, with minor changes to reflect recent experience and site-specific constraints. In addition, the scheduling has been revised to reflect the spent fuel management described in Section 3.4.1.

A schedule or sequence of activities is presented in Figure 4.1. The schedule reflects Scenario 3, a prompt decommissioning alternative, although the decontamination and dismantling activities shown in Figure 4.1 are essentially identical for all six scenarios. The sequence assumes that fuel is removed from the spent fuel pool after a five and one-half year cooling period. The key activities listed in the schedule do not reflect a one-to-one correspondence with those activities in the Appendix D cost table, but divide some activities for clarity and combine others for convenience. The schedule was prepared using "Microsoft Project Professional 2010" computer software.[35]

4.1 SCHEDULE ESTIMATE ASSUMPTIONS

The schedules are generated using a precedence network and associated software. Activity durations are based upon the actual man-hour estimates calculated for each area (Appendix G). The schedules are assembled by sequencing the work areas, considering work crew availability and material access/egress. The following assumptions were made in the development of the decommissioning schedule(s).

- The fuel handling area of the reactor building is isolated until such time that all spent fuel has been discharged from the spent fuel pool to the DOE and/or the ISFSI. Decontamination and dismantling of the fuel handling area is initiated once the pool is emptied (DECON scenarios).
- All work (except vessel and internals removal) is performed during an 8-hour workday, 5 days per week, with no overtime.
- Reactor and internals removal activities are performed by using separate crews for different activities working on different shifts, with a corresponding backshift charge for the second shift.
- Multiple crews work parallel activities to the maximum extent possible, consistent with optimum efficiency, adequate access for cutting, removal and laydown space, and with the stringent safety measures necessary during demolition of heavy components and structures.

- For plant systems removal, the systems with the longest removal durations in areas on the critical path are considered to determine the duration of the activity.
- The duration of the building demolition phase assumes that all fuel has been transferred to the new ISFSI. It also assumes that the new ISFSI is located far enough away from the power block so as not to require any additional safeguards to be put in place for the protection of the fuel and/or the use of more benign dismantling techniques.

4.2 PROJECT SCHEDULE

The period-dependent costs presented in Appendices C, D and E are based upon the durations developed in the various schedules for decommissioning Vermont Yankee. Durations are established between several milestones in each project period; these durations are used to establish a critical path for the entire project. In turn, the critical path duration for each period is used as the basis for determining the period-dependent costs.

Scenario timelines are provided as Figures 4.2 and 4.3. Milestone dates are based on either a 2012 or 2032 shutdown. In all cases, the fuel pool is emptied approximately five and one-half years after shutdown, with ISFSI operations continuing at the site until the DOE can complete the transfer of assemblies to a federal facility.

FIGURE 4.1
SCENARIO 3, DECON ACTIVITY SCHEDULE

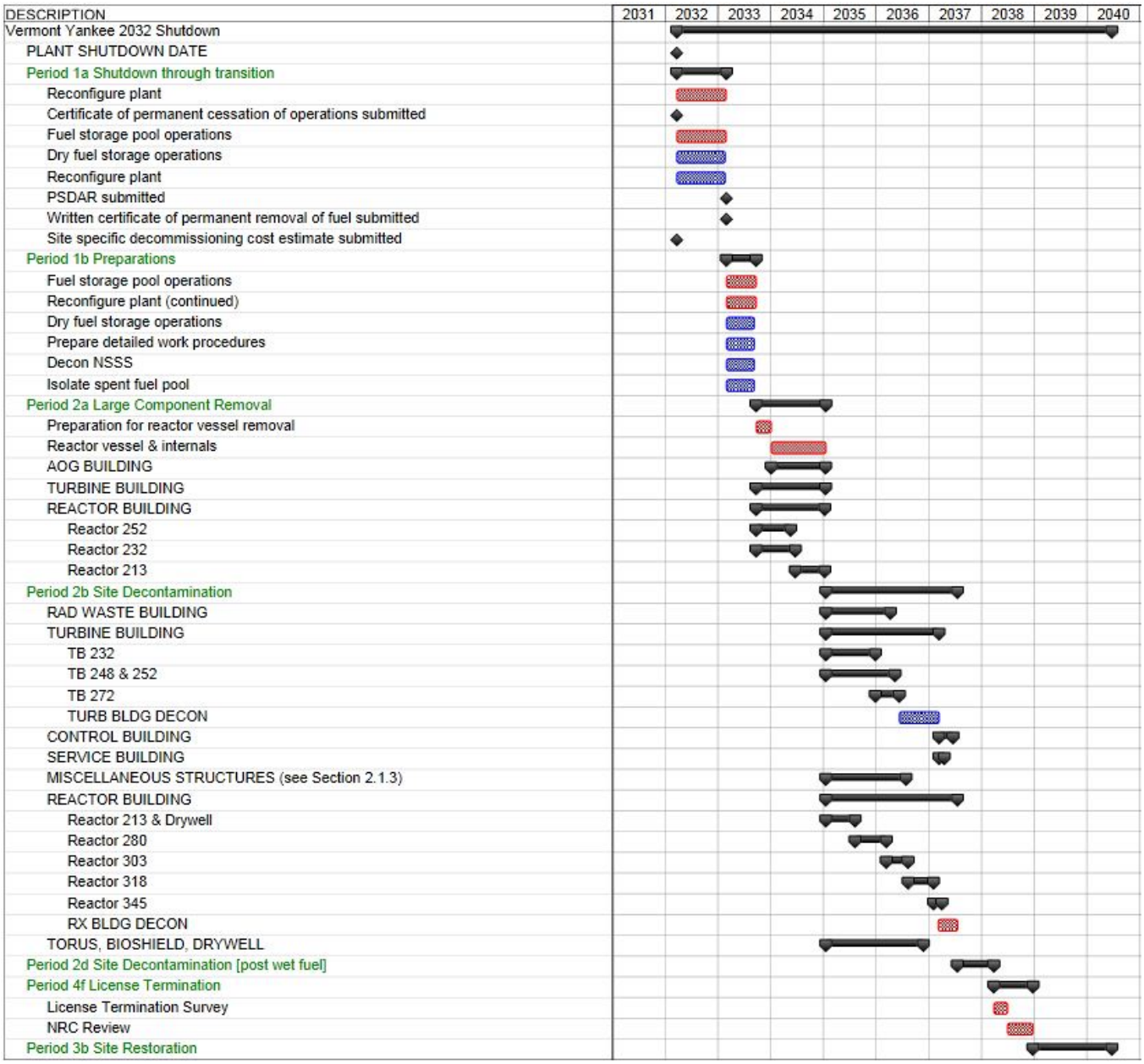
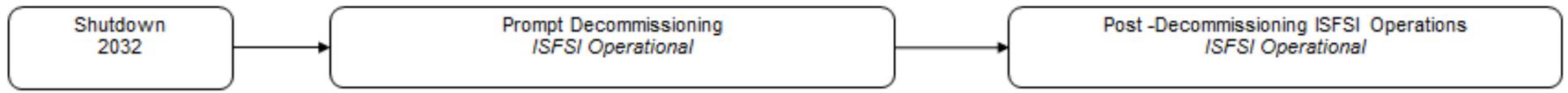


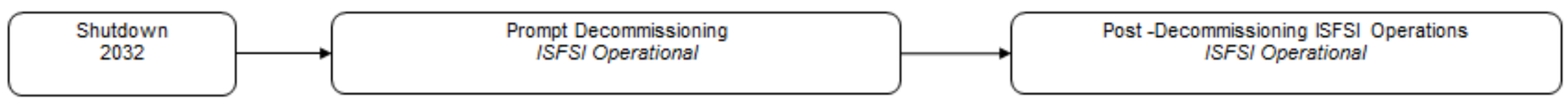
FIGURE 4.2
DECON TIMELINES

Scenario 3 - 2032 DECON - 2020 DOE



DECON	1a	1b	2a	2b	2d	2f	3b	3c	3d	3e	3f	End
	21-Mar-32	21-Mar-33	22-Sep-33	17-Mar-35	18-Sep-37	28-Mar-38	23-Dec-38	23-Jun-40	17-Dec-60	31-Dec-60	01-May-61	01-Jul-61
Sub Period Duration	1.0	0.51	1.5	2.5	0.52	0.74	1.5	20.48	0.04	0.33	0.17	
Elapsed Time		1.51	2.99	5.49	6.02	6.76	8.26	28.74	28.78	29.11	29.28	

Scenario 4 - 2032 DECON - 2082 DOE



DECON	1a	1b	2a	2b	2d	2f	3b	3c	3d	3e	3f	End
	21-Mar-32	21-Mar-33	22-Sep-33	17-Mar-35	18-Sep-37	28-Mar-38	23-Dec-38	23-Jun-40	17-Dec-82	31-Dec-82	01-May-83	01-Jul-83
Sub Period Duration	1.0	0.51	1.5	2.5	0.52	0.74	1.5	42.48	0.04	0.33	0.17	
Elapsed Time		1.51	2.99	5.49	6.02	6.76	8.26	50.74	50.78	51.11	51.28	

FIGURE 4.3
SAFSTOR TIMELINES

Scenario 1 - 2012 SAFSTOR - 2020 DOE

2012 SAFSTOR: Shutdown 2012 → Preparations for Safe-Storage → Wet & Dry Fuel Dormancy *ISFSI Operational* → Delayed Decommissioning (60 year complete)

	1a	1b	1c	2a	2b	2c	3a	3b	4a	4b	4f	5b	End
	21-Mar-12	21-Mar-13	21-Jun-13	22-Sep-13	18-Sep-17	31-Dec-45	29-Mar-66	29-Mar-67	30-Sep-67	08-Jan-69	25-Jun-71	21-Mar-72	20-Sep-73
Sub Period Duration	1.0	0.25	0.25	4.0	28.28	20.24	1.00	0.51	1.28	2.46	0.74	1.50	
Elapsed Time		1.25	1.51	5.49	33.78	54.02	55.02	55.53	56.80	59.26	60.00	61.50	

Scenario 2 - 2012 SAFSTOR - 2082 DOE

SAFSTOR: Shutdown 2012 → Preparations for Safe-Storage → Wet & Dry Fuel Dormancy *ISFSI Operational* → Delayed Decommissioning (60 year complete) *ISFSI Operational* → Post -Decommissioning ISFSI Operations *ISFSI Operational*

	1a	1b	1c	2a	2b	2c	3a	3b	4a	4b	4f	5b	5c	5d	5e	5f	End
	21-Mar-12	21-Mar-13	21-Jun-13	22-Sep-13	19-Sep-17	29-Mar-66	29-Mar-66	29-Mar-67	30-Sep-67	08-Jan-69	25-Jun-71	21-Mar-72	20-Sep-73	17-Dec-82	31-Dec-82	01-May-83	30-Jun-83
Sub Period Duration	1.0	0.25	0.25	3.99	48.52	0.00	1.00	0.51	1.28	2.46	0.74	1.50	9.24	0.04	0.33	0.16	
Elapsed Time		1.25	1.51	5.50	54.02	54.02	55.02	55.53	56.80	59.26	60.00	61.50	70.74	70.78	71.11	71.27	

Scenario 5 - 2032 SAFSTOR - 2020 DOE

SAFSTOR: Shutdown 2032 → Preparations for Safe-Storage → Wet & Dry Fuel Dormancy *ISFSI Operational* → Delayed Decommissioning (60 year complete)

	1a	1b	1c	2a	2b	2c	3a	3b	4a	4b	4f	5b	End
	21-Mar-32	21-Mar-33	21-Jun-33	22-Sep-33	18-Sep-37	31-Dec-60	29-Mar-86	29-Mar-87	30-Sep-87	08-Jan-89	25-Jun-91	21-Mar-92	20-Sep-93
Sub Period Duration	1.0	0.25	0.25	4.0	23.29	25.24	1.00	0.51	1.28	2.46	0.74	1.50	
Elapsed Time		1.25	1.51	5.49	28.78	54.02	55.02	55.53	56.80	59.26	60.00	61.50	

Scenario 6 - 2032 SAFSTOR - 2082 DOE

SAFSTOR: Shutdown 2032 → Preparations for Safe-Storage → Wet & Dry Fuel Dormancy *ISFSI Operational* → Delayed Decommissioning (60 year complete)

	1a	1b	1c	2a	2b	2c	3a	3b	4a	4b	4f	5b	End
	21-Mar-32	21-Mar-33	21-Jun-33	22-Sep-33	19-Sep-37	31-Dec-82	29-Mar-86	29-Mar-87	30-Sep-87	08-Jan-89	25-Jun-91	21-Mar-92	20-Sep-93
Sub Period Duration	1.0	0.25	0.25	3.99	45.28	0.00	1.00	0.51	1.28	2.46	0.74	1.50	
Elapsed Time		1.25	1.51	5.50	50.78	50.78	51.78	52.28	53.56	56.02	56.76	58.26	

5. DECOMMISSIONING WASTE STREAMS

Decontamination and dismantling activities will generate waste products that will need to be treated and/or disposed of in the process of amending or terminating the NRC license(s), remediating the property and releasing the site for alternative and unrestricted use. The waste products generated in decommissioning a nuclear power plant include radioactive and well as non-radioactive materials.

Radioactive Wastes

The objectives of the decommissioning process are the removal of all radioactive material from the site that would restrict its future use and the termination of the NRC license(s). This currently requires the remediation of all radioactive material at the site in excess of applicable legal limits. Under the Atomic Energy Act,[36] the NRC is responsible for protecting the public from sources of ionizing radiation. Title 10 of the Code of Federal Regulations delineates the production, utilization, and disposal of radioactive materials and processes. In particular, Part 71 defines radioactive material as it pertains to transportation and Part 61 specifies its disposition.

Most of the materials being transported for controlled burial are categorized as Low Specific Activity (LSA) or Surface Contaminated Object (SCO) materials containing Type A quantities, as defined in 49 CFR §173-178. Shipping containers are required to be Industrial Packages (IP-1, IP-2 or IP-3, as defined in subpart 173.411). For this study, commercially available steel containers are presumed to be used for the disposal of piping, small components, and concrete. Larger components can serve as their own containers, with proper closure of all openings, access ways, and penetrations.

The volumes of radioactive waste generated during the various decommissioning activities at the site are shown by line-item in Appendices C, D and E, and summarized in Table 5.1. The waste summaries are consistent with Part 61 classifications. Volumes are calculated based on the exterior dimensions for containerized material and on the displaced volume of components serving as their own waste containers.

The reactor vessel and internals are categorized as large quantity shipments and, accordingly, will be shipped in reusable, shielded truck casks with disposable liners. In calculating disposal costs, the burial fees are applied against the liner volume, as well as the special handling requirements of the payload. Packaging efficiencies are lower for the highly activated materials (greater than Type A quantity waste),

where high concentrations of gamma-emitting radionuclides limit the capacity of the shipping canisters.

No process system containing/handling radioactive substances at shutdown is presumed to meet material release criteria by decay alone (i.e., systems radioactive at shutdown are still be radioactive over the time period during which the decommissioning is accomplished, due to the presence of long-lived radionuclides). While the dose rates decrease with time, radionuclides such as ^{137}Cs will control the disposition requirements.

The waste material generated in the decontamination and dismantling is primarily generated during Period 2 of DECON and Period 4 of SAFSTOR. Material that is considered potentially contaminated when removed from the radiological controlled area is sent to processing facilities in Tennessee. A majority of this material is expected to be free-released after being surveyed. The remaining material is processed for disposal.

Disposal fees are based upon estimated charges, with surcharges added for the highly activated components generated, for example, in the segmentation of the reactor vessel. The cost to dispose of the majority of the material generated from the decontamination and dismantling activities is based upon the current cost for disposal at Energy*Solutions* facility in Clive, Utah. Separate rates were used for containerized waste and large components. Demolition debris including miscellaneous steel, scaffolding, and concrete was disposed of at a bulk rate. The decommissioning waste stream also included resins and dry active waste. Disposal costs for the higher activity waste (Class B and C) were based upon interim disposal rates for the Andrews County facility.

The disposal volumes reported in the following tables reflect the savings from reprocessing and recycling. The cost of waste processing/conditioning of potentially contaminated material and/or material designated for recovery appears as an "Off-Site Processing" cost for the systems and plant structures identified in Appendices C, D and E.

<u>Non-Radioactive Wastes</u>

The non-radioactive waste stream includes concrete debris from building demolition, sanitary waste from the excavation of the septic fields, and hazardous and industrial waste. The waste streams addressed in the decommissioning cost model include the following.

- Concrete Debris (non-contaminated): generated in the dismantling of site structures, rubble will be removed from the site for conventional disposal at an industrial landfill or recycled to recover steel and aggregate.
- Asbestos Containing Materials, Insulation, Transite Piping and Panels: the material is removed from the site and disposed of at an approved facility for asbestos containing materials.
- Excavated Soil: soil removed in the process of excavating subsurface systems and/or structures will be surveyed and characterized. Soil suitable for fill will be stockpiled on site until needed. Soil that does not meet the acceptance criteria will be disposed of off-site at an appropriate facility.

FIGURE 5.1
RADIOACTIVE WASTE DISPOSITION

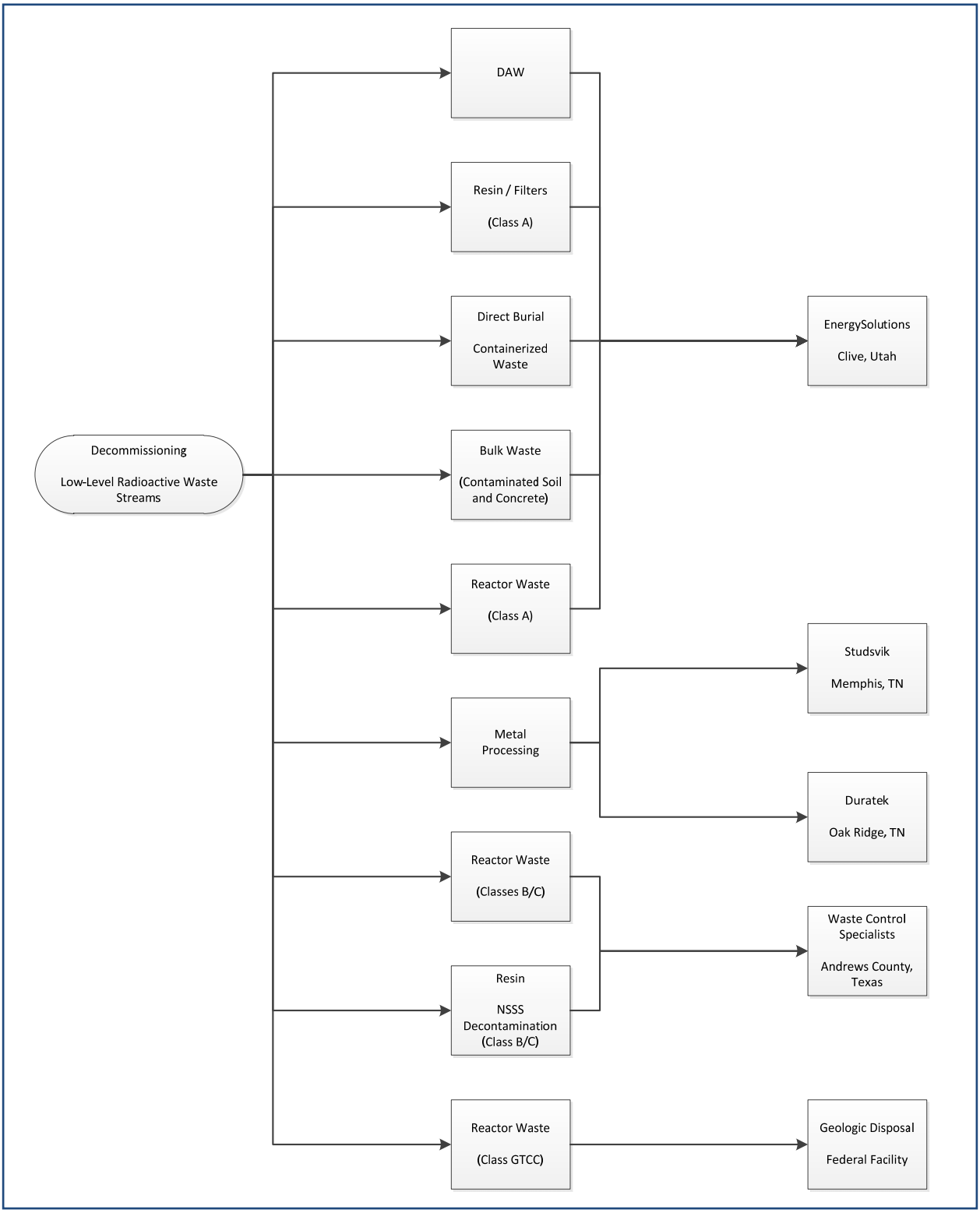


FIGURE 5.2
DECOMMISSIONING WASTE DESTINATIONS
RADIOLOGICAL

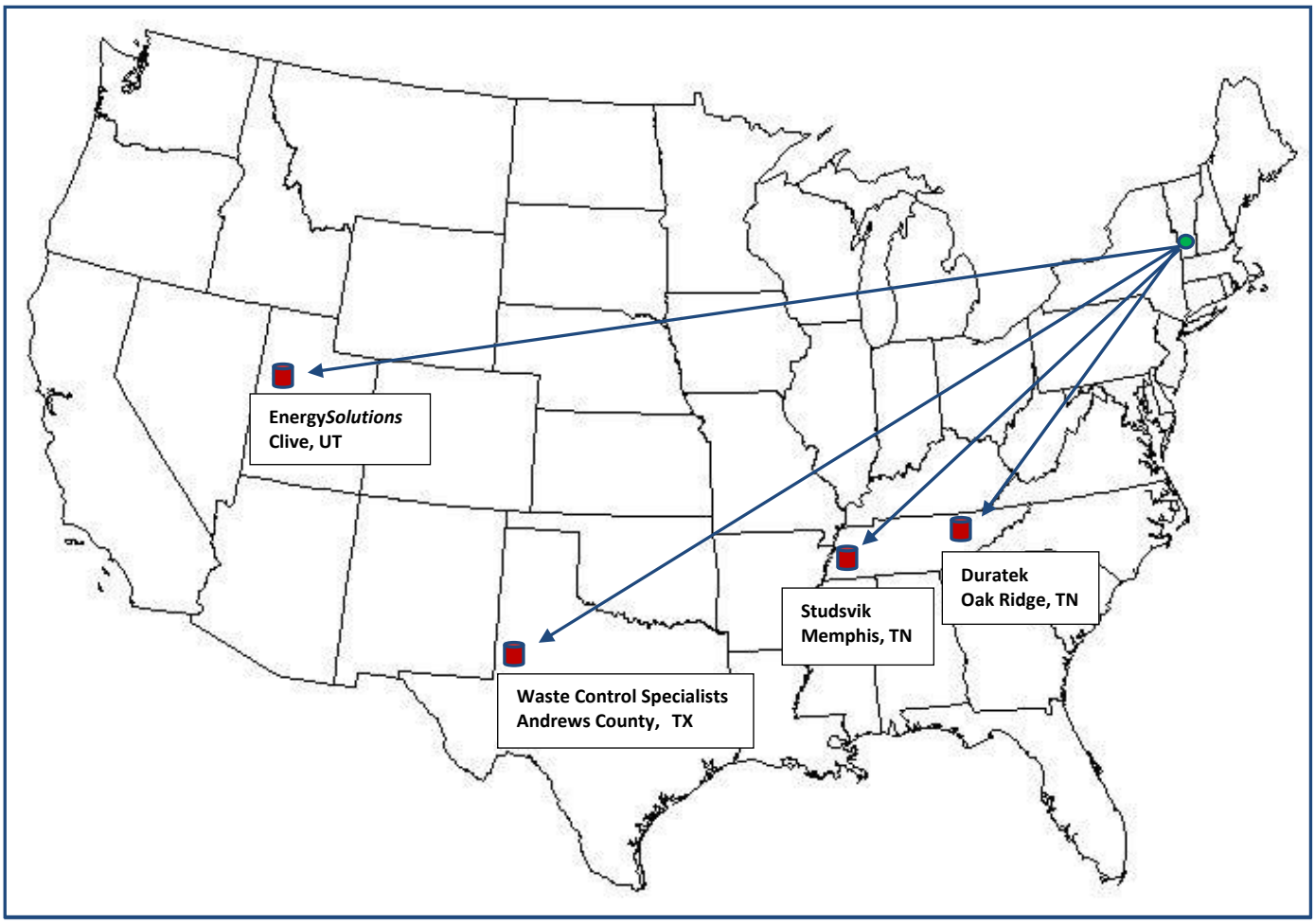


FIGURE 5.3
NON-RADIOACTIVE WASTE DISPOSITION

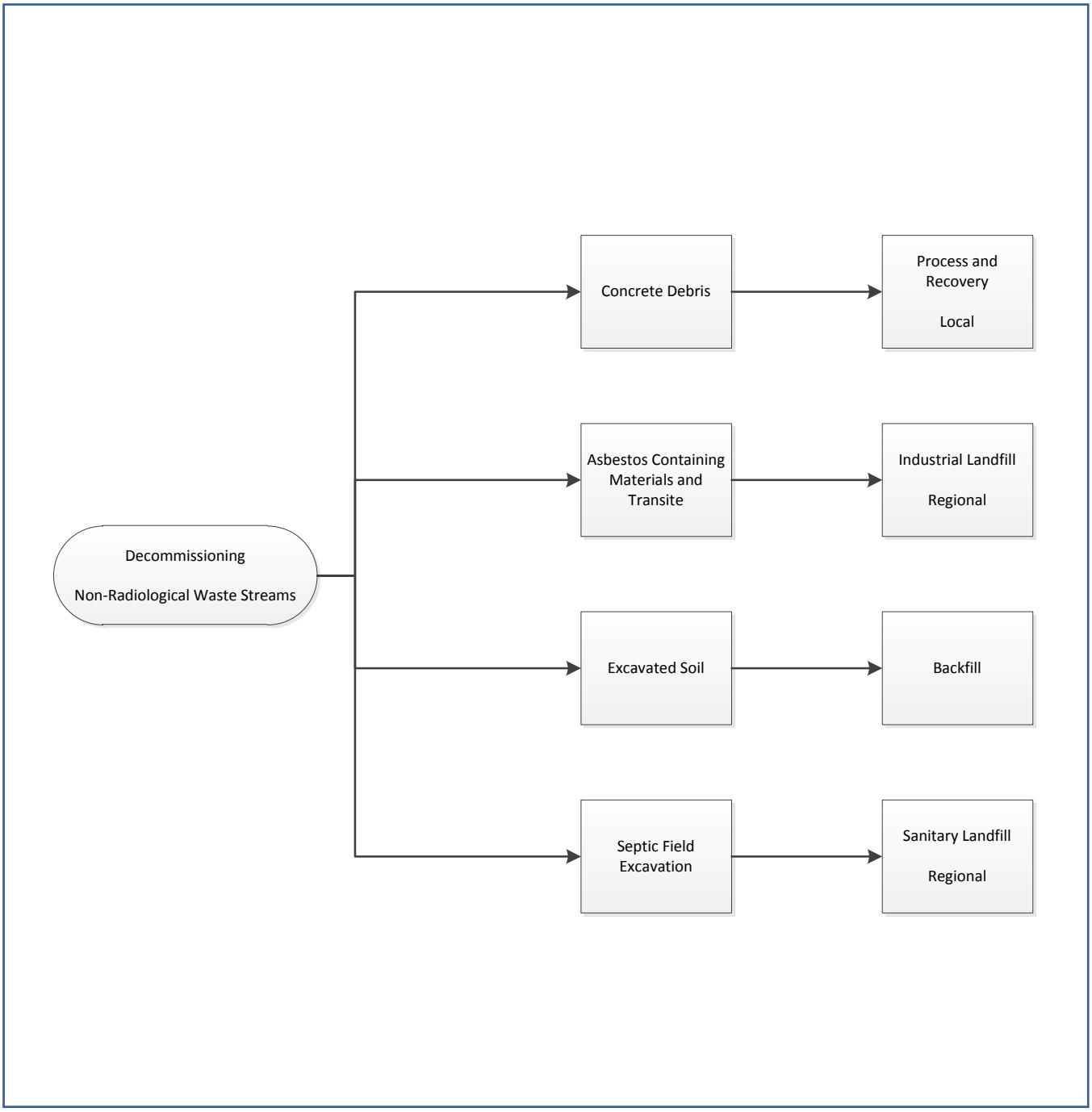


TABLE 5.1
RADIOACTIVE WASTE SUMMARY
DECON ALTERNATIVES

Waste	Cost Basis	Class [1]	Waste Volume (cubic feet)	Mass (pounds)
Low-Level Radioactive Waste (near-surface disposal)	Energy*Solutions*	A	302,088	23,617,869
	TCEQ Interim Rates	B	2,106	234,028
		C	918	71,190
Greater than Class C (geologic repository)	Spent Fuel Equivalent	GTCC	1,785	347,940
Processed/Conditioned (off-site recycling center)	Recycling Vendors	A	346,162	16,007,690
Total [2]			653,060	40,278,717

[1] Waste is classified according to the requirements as delineated in Title 10 CFR, Part 61.55
[2] Columns may not add due to rounding

TABLE 5.2
RADIOACTIVE WASTE SUMMARY
SAFSTOR ALTERNATIVES

Waste	Cost Basis	Class [1]	Waste Volume (cubic feet) [2]	Mass (pounds) [2]
Low-Level Radioactive Waste (near-surface disposal)	Energy*Solutions*	A	257,408	19,776,098
	TCEQ Interim Rates	B	1,064	109,055
		C	543	46,385
Greater than Class C (geologic repository)	Spent Fuel Equivalent	GTCC	1,785	347,940
Processed/Conditioned (off-site recycling center)	Recycling Vendors	A	409,099	18,617,790
Total [3]			669,899	38,897,268

[1] Waste is classified according to the requirements as delineated in Title 10 CFR, Part 61.55
[2] Average of four SAFSTOR scenarios
[3] Columns may not add due to rounding

6. RESULTS

The costs projected to decommission Vermont Yankee, for the scenarios evaluated, are shown in Table 6.1 and 6.2. The scenarios include both the currently scheduled shutdown of the nuclear unit in 2032, as well as the original date of 2012. The decommissioning costs include the use a pre-existing ISFSI at the site as well as the siting, licensing and construction of a new ISFSI.

The costs reflect the site-specific features of the Vermont Yankee plant, the local cost of labor, DOE's rate of acceptance for the spent fuel currently stored on site, and disposal of the low-level waste generated during decommissioning.

The major contributors to the cost of decommissioning Vermont Yankee are summarized at the end of this section. Staffing represents the largest single contributor to the overall cost. The magnitude of the expense is a function of both the size of the organization needed to manage the decommissioning, as well as the program duration.

It is assumed, for purposes of this analysis, that Entergy VY will hire a DOC to provide contract management of the decommissioning labor force and subcontractors. Utility oversight will continue, in a reduced capacity, during site restoration and beyond to ensure proper management of the spent fuel.

Once the operating license has been terminated, a significantly reduced staff provides the oversight of conventional demolition and site restoration. With decommissioning completed, only those individuals required to oversee and support the ongoing transfer of spent fuel to a DOE facility and ultimately, the decommissioning of the ISFSI are included.

The disposal of low-level radioactive waste represents the next largest contributor to the total program cost. The cost for waste disposal includes only those costs associated with the controlled disposition of the low-level radioactive waste generated from decontamination and dismantling activities, including plant equipment and components, structural material, filters, resins and dry-active waste. As described in Section 5, the Energy*Solutions* facility in Utah is the assumed destination for the majority of the low-level radioactive material requiring controlled disposal, with the remaining, high-activity waste destined for the newly opened Waste Control Specialists facility in Texas. Components requiring additional isolation from the environment (i.e., GTCC), are packaged for geologic disposal. The cost of geologic disposal is based upon a cost equivalent for spent fuel.

A large percentage of the waste material generated during decommissioning is designated for processing/recovery at an off-site facility. The facility is assumed to be located in Tennessee. Treatment of the waste significantly reduces the volume of material ultimately designated for controlled disposal. Contaminated soil was assumed to be sent to Utah for disposal.

Removal costs reflect the labor-intensive nature of the decommissioning process, as well as the management controls required to ensure a safe and successful program. Decontamination and packaging costs also have a large labor component that is based upon prevailing wages. Non-radiological demolition is a natural extension of the decommissioning process. The methods employed in decontamination and dismantling are generally destructive and indiscriminate in inflicting collateral damage. With a work force mobilized to support decommissioning operations, non-radiological demolition can be an integrated activity and a logical expansion of the work being performed in the process of terminating the operating license

The availability of an ISFSI at the site was presumed as a pre-condition to the completion of decommissioning, whether pre-existing or new. With the storage of spent fuel in the current wet storage pool, dismantling activities are restricted with limited application of destructive processes. Completion of the relocation of the spent fuel to dry storage releases the reactor building for decommissioning. Dry storage of the fuel provides additional flexibility in the event DOE is not able to meet it current commitments for completing the transfer of assemblies to an off-site facility and minimizes the associated caretaking expenses incurred by Entergy VY.

Contracted security services are identified as separate line item expenditures in the estimates. While the guard force is reduced from operating levels, there remains a need to control personnel and material throughout the decommissioning program, while the plant's operating license remains in effect. Security is also required as long as spent fuel resides at the site. While cross-training, a reduced protected area, and revised technical specifications have effectively reduced the size of the security force at other decommissioning sites, a significant number of personnel are still required to process the work force identified in this analysis and ensure public health and safety through the monitoring of material entering and leaving the site.

License termination survey costs are associated with the labor intensive and complex activity of verifying that contamination has been removed from the site to the levels specified by the regulating authorities. This process involves a systematic survey of all remaining plant surface areas and surrounding environs, sampling, isotopic analysis and documentation of the findings.

The cost reported for soil remediation is predicated on a preliminary assessment of the potential for contamination in the soil around the plant (based upon historical

evidence). A detailed site characterization was not performed. This allowance will be confirmed and/or modified based upon more detailed analyses to be performed in conjunction with the formulation of a license termination plan.

The remaining costs include allocations for waste packaging, transportation, energy consumption, mandated fees, contingencies, and required insurance premiums and other costs related to maintaining a viable organization. "Operating" costs, while generally reduced over the duration of the program, do need to be maintained either at a basic functional or regulatory level.

This study provides estimates for decommissioning the site under current requirements, based on present-day costs and available technology. It is therefore appropriate that this cost analysis be reviewed periodically and revised as needed.

TABLE 6.1
SUMMARY OF DECOMMISSIONING COST CONTRIBUTORS
DECON DECOMMISSIONING SCENARIOS
(thousands of $2011)

Scenarios	3	4
Cessation of Operations (year)	2032	2032
Spent Fuel Off Site (year)	2060	2082
Cost Elements		
Decontamination	13,022	13,022
Removal	101,232	101,232
Packaging	19,640	19,640
Transportation	22,594	22,594
Waste Disposal	72,373	72,373
Off-site Waste Processing	30,062	30,062
Program Management [1]	354,132	428,472
Corporate A&G	29,506	35,017
ISFSI-Related [2]	133,736	173,508
Insurance and Regulatory Fees	17,618	27,065
Energy	7,839	7,839
Characterization and Licensing Surveys	18,200	18,200
Property Taxes	219	384
Miscellaneous Equipment	6,542	6,542
Site O&M	6,884	12,146
Spent Fuel Pool Isolation	11,822	11,822
Total [3]	845,422	979,919

Scenarios	3	4
Cost Categories		
License Termination	566,714	566,714
Spent Fuel Management [4]	230,821	365,318
Site Restoration	47,887	47,887
Total	845,422	979,919

[1] Includes plant security
[2] Direct costs only: ISFSI construction, dry storage system components, cask loading and transfer
[3] Columns may not add due to rounding
[4] Includes period dependent costs, as appropriate, during fuel storage periods

TABLE 6.2
SUMMARY OF DECOMMISSIONING COST CONTRIBUTORS
SAFSTOR DECOMMISSIONING SCENARIOS
(thousands of $2011)

Scenarios	1	2	5	6
Cessation of Operations (year)	2012	2012	2032	2032
Spent Fuel Off Site (year)	2045	2082	2060	2082
Cost Elements				
Decontamination	16,969	16,969	16,969	16,969
Removal	100,554	100,949	100,528	100,639
Packaging	14,959	17,570	14,958	14,962
Transportation	18,950	18,954	18,949	18,953
Waste Disposal	42,952	42,968	43,703	43,721
Off-site Waste Processing	33,441	33,441	33,441	33,441
Program Management [1]	460,638	560,731	442,942	502,281
Corporate A&G	46,183	50,606	45,714	47,775
ISFSI-Related [2]	162,561	185,578	129,352	164,803
Insurance and Regulatory Fees	41,088	47,186	40,929	41,632
Energy	16,219	16,219	16,219	16,219
Characterization and Licensing Srvys	19,536	19,536	19,536	19,536
Property Taxes	460	533	460	460
Miscellaneous Equipment	19,769	19,769	19,769	19,769
Site O&M	14,591	16,929	14,591	14,591
Spent Fuel Pool Isolation	11,822	11,822	11,822	11,822
Total [3]	1,020,692	1,159,759	969,883	1,067,573

Scenarios	1	2	5	6
Cost Categories				
License Termination	645,773	610,278	653,115	622,571
Spent Fuel Management [4]	327,127	502,979	268,976	397,211
Site Restoration	47,792	46,502	47,792	47,792
Total	1,020,692	1,159,759	969,883	1,067,573

[1] Includes plant security
[2] Direct costs only: ISFSI construction, dry storage system components, cask loading and transfer
[3] Columns may not add due to rounding
[4] Includes period dependent costs, as appropriate, during fuel storage periods

7. REFERENCES

1. Memorandum of Understanding Among Entergy Nuclear Vermont Yankee, LLC, Vermont Yankee Nuclear Power Corporation, Central Vermont Public Service Corporation, Green Mountain Power Corporation, and the Vermont Department of Public Service, Docket No. 6545, March 6, 2002.

2. U.S. Code of Federal Regulations, Title 10, Parts 30, 40, 50, 51, 70 and 72, "General Requirements for Decommissioning Nuclear Facilities," Nuclear Regulatory Commission, 53 Fed. Reg. 24018, June 27, 1988.

3. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.159, "Assuring the Availability of Funds for Decommissioning Nuclear Reactors," Rev. 2, October 2011.

4. U.S. Code of Federal Regulations, Title 10, Part 20, Subpart E, "Radiological Criteria for License Termination."

5. U.S. Code of Federal Regulations, Title 10, Parts 20 and 50, "Entombment Options for Power Reactors," Advanced Notice of Proposed Rulemaking, 66 Fed. Reg. 52551, October 16, 2001.

6. U.S. Code of Federal Regulations, Title 10, Parts 2, 50 and 51, "Decommissioning of Nuclear Power Reactors," Nuclear Regulatory Commission, 61 Fed. Reg. 39278, July 29, 1996.

7. "Nuclear Waste Policy Act of 1982 and Amendments," U.S. Department of Energy's Office of Civilian Radioactive Management, 1982.

8. "Acceptance Priority Ranking & Annual Capacity Report," DOE/RW-0567, July 2004.

9. Blue Ribbon Commission on America's Nuclear Future Charter, "Objectives and Scope of Activities," http://www.brc.gov/index.php?q=page/charter.

10. "Blue Ribbon Commission on America's Nuclear Future, Report to the Secretary of Energy," http://www.brc.gov/, January 2012.

11. U.S. Code of Federal Regulations, Title 10, Part 50, "Domestic Licensing of Production and Utilization Facilities," Subpart 54 (bb), "Conditions of Licenses."

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12. "Low Level Radioactive Waste Policy Act," Public Law 96-573, 1980.

13. "Low-Level Radioactive Waste Policy Amendments Act of 1985," Public Law 99-240, January 15, 1986.

14. U.S. Code of Federal Regulations, Title 10, Part 61.55 "Waste Classification"

15. U.S. Code of Federal Regulations, Title 10, Part 20, Subpart E, "Final Rule, Radiological Criteria for License Termination," 62 Fed. Reg. 39058, July 21, 1997.

16. "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination," EPA Memorandum OSWER No. 9200.4-18, August 22, 1997.

17. U.S. Code of Federal Regulations, Title 40, Part 141.16, "Maximum contaminant levels for beta particle and photon radioactivity from man-made radionuclides in community water systems."

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22. W.J. Manion and T.S. LaGuardia, "Decommissioning Handbook," U.S. Department of Energy, DOE/EV/10128-1, November 1980.

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APPENDIX A

UNIT COST FACTOR DEVELOPMENT

APPENDIX A

UNIT COST FACTOR DEVELOPMENT

Example: Unit Factor for Removal of Contaminated Heat Exchanger < 3,000 lbs.

1. SCOPE

Heat exchangers weighing < 3,000 lbs. will be removed in one piece using a crane or small hoist. They will be disconnected from the inlet and outlet piping. The heat exchanger will be sent to the packing area.

2. CALCULATIONS

Activity Description	Critical Duration (minutes)
Install contamination controls, remove insulation, and mount pipe cutters	60
Disconnect inlet and outlet lines, cap openings	60
Rig for removal	30
Unbolt from mounts	30
Remove contamination controls	15
Remove heat exchanger, wrap in plastic, and send to packing area	60
Critical Duration	255
Work Adjustments (Work Difficulty Factors)	
+ Respiratory Protection (25% of Critical Duration)	64
+ Radiation/ALARA (20% of Critical Duration)	51
Adjusted Work Duration	370
+ Protective Clothing (30% of Adjusted Work Duration)	111
Productive Work Duration	481
+ Work break adjustment (8.33 % of Productive Work Duration)	40
Total Work Duration	521

*** Total Work Duration = 521 minutes or 8.683 hours ***

APPENDIX A (continued)

3. LABOR REQUIRED

Crew	Number	Duration (hours)	Rate ($/hr)	Cost
Laborers	3.00	8.683	$47.52	$1,237.85
Craftsmen	2.00	8.683	$61.55	$1,068.88
Foreman	1.00	8.683	$65.29	$566.91
General Foreman	0.25	8.683	$68.99	$149.76
Fire Watch	0.05	8.683	$47.52	$20.63
Health Physics Technician	1.00	8.683	$36.57	$317.54
Total labor cost				$3,361.57

4. EQUIPMENT & CONSUMABLES COSTS

Equipment Costs	none
Consumables/Materials Costs	
Universal Sorbent 50 @ $0.43 sq ft {1}	$21.50
Tarpaulins (oil resistant/fire retardant) 50 @ $0.32/sq ft {2}	$16.00
Gas torch consumables 1 @ $8.19/hr x 1 hr {3}	$ 8.19
Subtotal cost of equipment and materials	$45.69
Overhead & sales tax on equipment and materials @ 16.00%	$7.31
Total costs, equipment & material	$53.00

TOTAL COST: Removal of contaminated heat exchanger <3000 pounds: **$3,414.57**

Total labor cost:	$3,361.57
Total equipment/material costs:	$53.00
Total craft labor man-hours required per unit:	63.386

APPENDIX A (continued)

5. NOTES AND REFERENCES

- Work difficulty factors were developed in conjunction with the AIF (now NEI) program to standardize nuclear decommissioning cost estimates and are delineated in Volume 1, Chapter 5 of the "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates," AIF/NESP-036, May 1986.
- References for equipment & consumables costs:
  1. www.mcmaster.com online catalog, McMaster Carr Spill Control (7193T88)
  2. R.S. Means (2011) Division 01 56, Section 13.60-0600, page 20
  3. R.S. Means (2011) Division 01 54 33, Section 40-6360, page 664
- Material and consumable costs were adjusted using the regional indices for Brattleboro, Vermont.

APPENDIX B

UNIT COST FACTOR LISTING
(DECON: Power Block Structures Only)

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Removal of clean instrument and sampling tubing, $/linear foot	0.52
Removal of clean pipe 0.25 to 2 inches diameter, $/linear foot	5.54
Removal of clean pipe >2 to 4 inches diameter, $/linear foot	7.91
Removal of clean pipe >4 to 8 inches diameter, $/linear foot	15.42
Removal of clean pipe >8 to 14 inches diameter, $/linear foot	29.81
Removal of clean pipe >14 to 20 inches diameter, $/linear foot	38.64
Removal of clean pipe >20 to 36 inches diameter, $/linear foot	56.88
Removal of clean pipe >36 inches diameter, $/linear foot	67.63
Removal of clean valve >2 to 4 inches	102.52
Removal of clean valve >4 to 8 inches	154.22
Removal of clean valve >8 to 14 inches	298.09
Removal of clean valve >14 to 20 inches	386.40
Removal of clean valve >20 to 36 inches	568.79
Removal of clean valve >36 inches	676.33
Removal of clean pipe hanger for small bore piping	32.93
Removal of clean pipe hanger for large bore piping	120.79
Removal of clean pump, <300 pound	257.67
Removal of clean pump, 300-1000 pound	717.60
Removal of clean pump, 1000-10,000 pound	2,851.47
Removal of clean pump, >10,000 pound	5,506.06
Removal of clean pump motor, 300-1000 pound	302.73
Removal of clean pump motor, 1000-10,000 pound	1,188.89
Removal of clean pump motor, >10,000 pound	2,675.02
Removal of clean heat exchanger <3000 pound	1,528.53
Removal of clean heat exchanger >3000 pound	3,835.76
Removal of clean feedwater heater/deaerator	10,831.66
Removal of clean moisture separator/reheater	22,293.82
Removal of clean tank, <300 gallons	331.72
Removal of clean tank, 300-3000 gallon	1,050.72
Removal of clean tank, >3000 gallons, $/square foot surface area	8.77

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Removal of clean electrical equipment, <300 pound	141.86
Removal of clean electrical equipment, 300-1000 pound	492.89
Removal of clean electrical equipment, 1000-10,000 pound	985.75
Removal of clean electrical equipment, >10,000 pound	2,345.28
Removal of clean electrical transformer < 30 tons	1,628.77
Removal of clean electrical transformer > 30 tons	4,690.56
Removal of clean standby diesel generator, <100 kW	1,663.65
Removal of clean standby diesel generator, 100 kW to 1 MW	3,713.37
Removal of clean standby diesel generator, >1 MW	7,687.43
Removal of clean electrical cable tray, $/linear foot	13.17
Removal of clean electrical conduit, $/linear foot	5.75
Removal of clean mechanical equipment, <300 pound	141.86
Removal of clean mechanical equipment, 300-1000 pound	492.89
Removal of clean mechanical equipment, 1000-10,000 pound	985.75
Removal of clean mechanical equipment, >10,000 pound	2,345.28
Removal of clean HVAC equipment, <300 pound	171.54
Removal of clean HVAC equipment, 300-1000 pound	592.24
Removal of clean HVAC equipment, 1000-10,000 pound	1,180.31
Removal of clean HVAC equipment, >10,000 pound	2,345.28
Removal of clean HVAC ductwork, $/pound	0.55
Removal of contaminated instrument and sampling tubing, $/linear foot	1.17
Removal of contaminated pipe 0.25 to 2 inches diameter, $/linear foot	17.33
Removal of contaminated pipe >2 to 4 inches diameter, $/linear foot	29.25
Removal of contaminated pipe >4 to 8 inches diameter, $/linear foot	46.38
Removal of contaminated pipe >8 to 14 inches diameter, $/linear foot	91.23
Removal of contaminated pipe >14 to 20 inches diameter, $/linear foot	109.39
Removal of contaminated pipe >20 to 36 inches diameter, $/linear foot	151.66
Removal of contaminated pipe >36 inches diameter, $/linear foot	180.10
Removal of contaminated valve >2 to 4 inches	354.16
Removal of contaminated valve >4 to 8 inches	424.97

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Removal of contaminated valve >8 to 14 inches	868.83
Removal of contaminated valve >14 to 20 inches	1,107.27
Removal of contaminated valve >20 to 36 inches	1,473.13
Removal of contaminated valve >36 inches	1,757.45
Removal of contaminated pipe hanger for small bore piping	111.97
Removal of contaminated pipe hanger for large bore piping	385.01
Removal of contaminated pump, <300 pound	730.18
Removal of contaminated pump, 300-1000 pound	1,719.37
Removal of contaminated pump, 1000-10,000 pound	5,868.95
Removal of contaminated pump, >10,000 pound	14,242.27
Removal of contaminated pump motor, 300-1000 pound	738.15
Removal of contaminated pump motor, 1000-10,000 pound	2,374.95
Removal of contaminated pump motor, >10,000 pound	5,364.75
Removal of contaminated heat exchanger <3000 pound	3,414.57
Removal of contaminated heat exchanger >3000 pound	9,912.93
Removal of contaminated feedwater heater/deaerator	25,185.71
Removal of contaminated moisture separator/reheater	55,320.58
Removal of contaminated tank, <300 gallons	1,220.60
Removal of contaminated tank, >300 gallons, $/square foot	24.70
Removal of contaminated electrical equipment, <300 pound	571.92
Removal of contaminated electrical equipment, 300-1000 pound	1,398.62
Removal of contaminated electrical equipment, 1000-10,000 pound	2,693.65
Removal of contaminated electrical equipment, >10,000 pound	5,469.26
Removal of contaminated electrical cable tray, $/linear foot	28.08
Removal of contaminated electrical conduit, $/linear foot	14.18
Removal of contaminated mechanical equipment, <300 pound	649.98
Removal of contaminated mechanical equipment, 300-1000 pound	1,585.97
Removal of contaminated mechanical equipment, 1000-10,000 pound	3,058.60
Removal of contaminated mechanical equipment, >10,000 pound	5,469.26
Removal of contaminated HVAC equipment, <300 pound	649.98

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Removal of contaminated HVAC equipment, 300-1000 pound	1,585.97
Removal of contaminated HVAC equipment, 1000-10,000 pound	3,058.60
Removal of contaminated HVAC equipment, >10,000 pound	5,469.26
Removal of contaminated HVAC ductwork, $/pound	1.62
Removal/plasma arc cut of contaminated thin metal components, $/linear in.	3.18
Additional decontamination of surface by washing, $/square foot	6.64
Additional decontamination of surfaces by hydrolasing, $/square foot	28.64
Decontamination rig hook up and flush, $/ 250 foot length	5,446.48
Chemical flush of components/systems, $/gallon	13.51
Removal of clean standard reinforced concrete, $/cubic yard	135.25
Removal of grade slab concrete, $/cubic yard	182.34
Removal of clean concrete floors, $/cubic yard	341.00
Removal of sections of clean concrete floors, $/cubic yard	1,045.24
Removal of clean heavily rein concrete w/#9 rebar, $/cubic yard	220.09
Removal of contaminated heavily rein concrete w/#9 rebar, $/cubic yard	1,651.04
Removal of clean heavily rein concrete w/#18 rebar, $/cubic yard	278.23
Removal of contaminated heavily rein concrete w/#18 rebar, $/cubic yard	2,179.14
Removal heavily rein concrete w/#18 rebar & steel embedments, $/cubic yard	440.90
Removal of below-grade suspended floors, $/cubic yard	341.00
Removal of clean monolithic concrete structures, $/cubic yard	885.33
Removal of contaminated monolithic concrete structures, $/cubic yard	1,642.89
Removal of clean foundation concrete, $/cubic yard	692.87
Removal of contaminated foundation concrete, $/cubic yard	1,529.54
Explosive demolition of bulk concrete, $/cubic yard	29.77
Removal of clean hollow masonry block wall, $/cubic yard	94.08
Removal of contaminated hollow masonry block wall, $/cubic yard	226.97
Removal of clean solid masonry block wall, $/cubic yard	94.08
Removal of contaminated solid masonry block wall, $/cubic yard	226.97
Backfill of below-grade voids, $/cubic yard	25.29
Removal of subterranean tunnels/voids, $/linear foot	111.32

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Placement of concrete for below-grade voids, $/cubic yard	104.05
Excavation of clean material, $/cubic yard	2.86
Excavation of contaminated material, $/cubic yard	29.28
Removal of clean concrete rubble (tipping fee included), $/cubic yard	20.24
Removal of contaminated concrete rubble, $/cubic yard	20.31
Removal of building by volume, $/cubic foot	0.28
Removal of clean building metal siding, $/square foot	1.19
Removal of contaminated building metal siding, $/square foot	2.93
Removal of standard asphalt roofing, $/square foot	2.45
Removal of transite panels, $/square foot	2.13
Scarifying contaminated concrete surfaces (drill & spall), $/square foot	9.36
Scabbling contaminated concrete floors, $/square foot	5.82
Scabbling contaminated concrete walls, $/square foot	15.87
Scabbling contaminated ceilings, $/square foot	54.51
Scabbling structural steel, $/square foot	4.83
Removal of clean overhead crane/monorail < 10 ton capacity	688.64
Removal of contaminated overhead crane/monorail < 10 ton capacity	1,445.28
Removal of clean overhead crane/monorail >10-50 ton capacity	1,652.74
Removal of contaminated overhead crane/monorail >10-50 ton capacity	3,461.77
Removal of polar crane > 50 ton capacity	6,911.21
Removal of gantry crane > 50 ton capacity	29,316.06
Removal of structural steel, $/pound	0.21
Removal of clean steel floor grating, $/square foot	4.81
Removal of contaminated steel floor grating, $/square foot	10.27
Removal of clean free standing steel liner, $/square foot	13.15
Removal of contaminated free standing steel liner, $/square foot	28.87
Removal of clean concrete-anchored steel liner, $/square foot	6.57
Removal of contaminated concrete-anchored steel liner, $/square foot	33.28
Placement of scaffolding in clean areas, $/square foot	14.77
Placement of scaffolding in contaminated areas, $/square foot	21.36

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Landscaping with topsoil, $/acre	22,868.40
Cost of CPC B-88 LSA box & preparation for use	1,691.89
Cost of CPC B-25 LSA box & preparation for use	1,552.42
Cost of CPC B-12V 12 gauge LSA box & preparation for use	1,269.60
Cost of CPC B-144 LSA box & preparation for use	8,423.02
Cost of LSA drum & preparation for use	174.51
Cost of cask liner for CNSI 8 120A cask (resins)	6,405.12
Cost of cask liner for CNSI 8 120A cask (filters)	6,683.90
Decontamination of surfaces with vacuuming, $/square foot	0.78

APPENDIX C

DETAILED COST ANALYSES

2012 SHUTDOWN SCENARIOS, SAFSTOR ALTERNATIVE

Table C-1, Scenario 1 ..... C-2
Table C-2, Scenario 2 ..... C-15

Table C-1
Vermont Yankee Nuclear Power Station
Scenario 1: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2045
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a.1.1	SAFSTOR site characterization survey	-	-	-	-	-	-	295	89	384	384	-	-	-	-	-	-	-	-	-	-
1a.1.2	Prepare preliminary decommissioning cost	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
1a.1.3	Notification of Cessation of Operations									a											
1a.1.4	Remove fuel & source material									n/a											
1a.1.5	Notification of Permanent Defueling									a											
1a.1.6	Deactivate plant systems & process waste									a											
1a.1.7	Prepare and submit PSDAR	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1a.1.8	Review plant dwgs & specs.	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
1a.1.9	Perform detailed rad survey									a											
1a.1.10	Estimate by-product inventory	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.11	End product description	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.12	Detailed by-product inventory	-	-	-	-	-	-	176	26	202	202	-	-	-	-	-	-	-	-	-	1,500
1a.1.13	Define major work sequence	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.14	Perform SER and EA	-	-	-	-	-	-	363	54	417	417	-	-	-	-	-	-	-	-	-	3,100
1a.1.15	Perform Site-Specific Cost Study	-	-	-	-	-	-	585	88	673	673	-	-	-	-	-	-	-	-	-	5,000
Activity Specifications																					
1a.1.16.1	Prepare plant and facilities for SAFSTOR	-	-	-	-	-	-	576	86	662	662	-	-	-	-	-	-	-	-	-	4,920
1a.1.16.2	Plant systems	-	-	-	-	-	-	488	73	561	561	-	-	-	-	-	-	-	-	-	4,167
1a.1.16.3	Plant structures and buildings	-	-	-	-	-	-	365	55	420	420	-	-	-	-	-	-	-	-	-	3,120
1a.1.16.4	Waste management	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1a.1.16.5	Facility and site dormancy	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1a.1.16	Total	-	-	-	-	-	-	1,897	285	2,182	2,182	-	-	-	-	-	-	-	-	-	16,207
Detailed Work Procedures																					
1a.1.17.1	Plant systems	-	-	-	-	-	-	138	21	159	159	-	-	-	-	-	-	-	-	-	1,183
1a.1.17.2	Facility closeout & dormancy	-	-	-	-	-	-	140	21	162	162	-	-	-	-	-	-	-	-	-	1,200
1a.1.17	Total	-	-	-	-	-	-	279	42	321	321	-	-	-	-	-	-	-	-	-	2,383
1a.1.18	Procure vacuum drying system	-	-	-	-	-	-	12	2	13	13	-	-	-	-	-	-	-	-	-	100
1a.1.19	Drain/de-energize non-cont. systems									a											
1a.1.20	Drain & dry NSSS									a											
1a.1.21	Drain/de-energize contaminated systems									a											
1a.1.22	Decon/secure contaminated systems									a											
1a.1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	4,496	719	5,215	5,215	-	-	-	-	-	-	-	-	-	35,890
Period 1a Collateral Costs																					
1a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	20,820	3,123	23,943	-	23,943	-	-	-	-	-	-	-	-	-
1a.3	Subtotal Period 1a Collateral Costs	-	-	-	-	-	-	20,820	3,123	23,943	-	23,943	-	-	-	-	-	-	-	-	-
Period 1a Period-Dependent Costs																					
1a.4.1	Insurance	-	-	-	-	-	-	857	86	943	943	-	-	-	-	-	-	-	-	-	-
1a.4.2	Property taxes	-	-	-	-	-	-	7	1	7	7	-	-	-	-	-	-	-	-	-	-
1a.4.3	Health physics supplies	-	347	-	-	-	-	-	87	433	433	-	-	-	-	-	-	-	-	-	-
1a.4.4	Heavy equipment rental	-	338	-	-	-	-	-	51	389	389	-	-	-	-	-	-	-	-	-	-
1a.4.5	Disposal of DAW generated	-	-	11	10	-	45	-	14	79	79	-	-	-	610	-	-	-	12,190	20	-
1a.4.6	Plant energy budget	-	-	-	-	-	-	1,173	176	1,349	1,349	-	-	-	-	-	-	-	-	-	-
1a.4.7	NRC Fees	-	-	-	-	-	-	809	81	890	890	-	-	-	-	-	-	-	-	-	-
1a.4.8	Emergency Planning Fees	-	-	-	-	-	-	4,660	466	5,126	-	5,126	-	-	-	-	-	-	-	-	-
1a.4.9	Site O&M	-	-	-	-	-	-	208	31	239	239	-	-	-	-	-	-	-	-	-	-
1a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	763	114	878	-	878	-	-	-	-	-	-	-	-	-
1a.4.11	ISFSI Operating Costs	-	-	-	-	-	-	89	13	103	-	103	-	-	-	-	-	-	-	-	-
1a.4.12	Corporate A&G	-	-	-	-	-	-	8,708	1,306	10,014	10,014	-	-	-	-	-	-	-	-	-	-
1a.4.13	Security Staff Cost	-	-	-	-	-	-	5,356	803	6,159	6,159	-	-	-	-	-	-	-	-	-	157,471
1a.4.14	Utility Staff Cost	-	-	-	-	-	-	24,094	3,614	27,708	27,708	-	-	-	-	-	-	-	-	-	423,400
1a.4	Subtotal Period 1a Period-Dependent Costs	-	685	11	10	-	45	46,723	6,843	54,316	48,210	6,106	-	-	610	-	-	-	12,190	20	580,871
1a.0	TOTAL PERIOD 1a COST	-	685	11	10	-	45	72,039	10,685	83,474	53,425	30,049	-	-	610	-	-	-	12,190	20	616,761

Table C-1
Vermont Yankee Nuclear Power Station
Scenario 1: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2045
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1b - SAFSTOR Limited DECON Activities																					
Period 1b Direct Decommissioning Activities																					
Decontamination of Site Buildings																					
1b.1.1.1	Reactor	2,212	-	-	-	-	-	-	1,106	3,318	3,318	-	-	-	-	-	-	-	-	35,257	-
1b.1.1.2	AOG	93	-	-	-	-	-	-	47	140	140	-	-	-	-	-	-	-	-	1,486	-
1b.1.1.3	Equipment Lock	7	-	-	-	-	-	-	3	10	10	-	-	-	-	-	-	-	-	108	-
1b.1.1.4	LLRW	1	-	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	11	-
1b.1.1.5	Misc Cont Yard Structures	85	-	-	-	-	-	-	43	128	128	-	-	-	-	-	-	-	-	1,359	-
1b.1.1.6	North Warehouse	34	-	-	-	-	-	-	17	51	51	-	-	-	-	-	-	-	-	544	-
1b.1.1.7	Radwaste	65	-	-	-	-	-	-	32	97	97	-	-	-	-	-	-	-	-	1,033	-
1b.1.1.8	Radwaste Compactor	2	-	-	-	-	-	-	1	3	3	-	-	-	-	-	-	-	-	36	-
1b.1.1.9	Turbine	531	-	-	-	-	-	-	265	796	796	-	-	-	-	-	-	-	-	8,452	-
1b.1.1.10	Reactor (post fuel)	158	-	-	-	-	-	-	79	236	236	-	-	-	-	-	-	-	-	2,511	-
1b.1.1	Totals	3,188	-	-	-	-	-	-	1,594	4,781	4,781	-	-	-	-	-	-	-	-	50,798	-
1b.1	Subtotal Period 1b Activity Costs	3,188	-	-	-	-	-	-	1,594	4,781	4,781	-	-	-	-	-	-	-	-	50,798	-
Period 1b Additional Costs																					
1b.2.1	Spent Fuel Pool Isolation	-	-	-	-	-	-	10,280	1,542	11,822	11,822	-	-	-	-	-	-	-	-	-	-
1b.2.2	Asbestos Remediation	-	1,644	30	177	-	602	67	601	3,121	3,121	-	-	-	9,938	-	-	-	129,188	13,287	-
1b.2.3	Operational Waste	406	-	139	1,052	-	1,045	-	636	3,277	3,277	-	-	-	2,600	-	-	-	156,000	507	-
1b.2.4	Hazardous Waste	-	-	197	95	1,692	-	-	288	2,271	2,271	-	-	3,288	-	-	-	-	354,266	1,619	-
1b.2	Subtotal Period 1b Additional Costs	406	1,644	366	1,323	1,692	1,647	10,347	3,067	20,491	20,491	-	-	3,288	12,538	-	-	-	639,454	15,413	-
Period 1b Collateral Costs																					
1b.3.1	Decon equipment	667	-	-	-	-	-	-	100	767	767	-	-	-	-	-	-	-	-	-	-
1b.3.2	Process decommissioning water waste	267	-	90	681	-	677	-	414	2,128	2,128	-	-	-	1,684	-	-	-	101,021	328	-
1b.3.4	Small tool allowance	-	60	-	-	-	-	-	9	69	69	-	-	-	-	-	-	-	-	-	-
1b.3.5	Spent Fuel Capital and Transfer	-	-	-	-	-	-	8,128	1,219	9,347	-	9,347	-	-	-	-	-	-	-	-	-
1b.3	Subtotal Period 1b Collateral Costs	933	60	90	681	-	677	8,128	1,742	12,312	2,964	9,347	-	-	1,684	-	-	-	101,021	328	-
Period 1b Period-Dependent Costs																					
1b.4.1	Decon supplies	1,275	-	-	-	-	-	-	319	1,593	1,593	-	-	-	-	-	-	-	-	-	-
1b.4.2	Insurance	-	-	-	-	-	-	105	11	116	116	-	-	-	-	-	-	-	-	-	-
1b.4.3	Property taxes	-	-	-	-	-	-	2	0	2	2	-	-	-	-	-	-	-	-	-	-
1b.4.4	Health physics supplies	-	301	-	-	-	-	-	75	376	376	-	-	-	-	-	-	-	-	-	-
1b.4.5	Heavy equipment rental	-	85	-	-	-	-	-	13	98	98	-	-	-	-	-	-	-	-	-	-
1b.4.6	Disposal of DAW generated	-	-	8	7	-	35	-	11	61	61	-	-	-	466	-	-	-	9,315	15	-
1b.4.7	Plant energy budget	-	-	-	-	-	-	296	44	340	340	-	-	-	-	-	-	-	-	-	-
1b.4.8	NRC Fees	-	-	-	-	-	-	146	15	161	161	-	-	-	-	-	-	-	-	-	-
1b.4.9	Emergency Planning Fees	-	-	-	-	-	-	1,032	103	1,136	-	1,136	-	-	-	-	-	-	-	-	-
1b.4.10	Site O&M	-	-	-	-	-	-	52	8	60	60	-	-	-	-	-	-	-	-	-	-
1b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	192	29	221	-	221	-	-	-	-	-	-	-	-	-
1b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	23	3	26	-	26	-	-	-	-	-	-	-	-	-
1b.4.13	Corporate A&G	-	-	-	-	-	-	1,090	164	1,254	1,254	-	-	-	-	-	-	-	-	-	-
1b.4.14	Security Staff Cost	-	-	-	-	-	-	1,350	202	1,552	1,552	-	-	-	-	-	-	-	-	-	39,691
1b.4.15	Utility Staff Cost	-	-	-	-	-	-	6,073	911	6,984	6,984	-	-	-	-	-	-	-	-	-	106,720
1b.4	Subtotal Period 1b Period-Dependent Costs	1,275	386	8	7	-	35	10,362	1,907	13,980	12,598	1,383	-	-	466	-	-	-	9,315	15	146,411
1b.0	TOTAL PERIOD 1b COST	5,801	2,091	464	2,012	1,692	2,359	28,836	8,310	51,565	40,835	10,730	-	3,288	14,687	-	-	-	749,790	66,554	146,411
PERIOD 1c - Preparations for SAFSTOR Dormancy																					
Period 1c Direct Decommissioning Activities																					
1c.1.1	Prepare support equipment for storage	-	455	-	-	-	-	-	68	523	523	-	-	-	-	-	-	-	-	3,000	-
1c.1.2	Install containment pressure equal. lines	-	43	-	-	-	-	-	6	50	50	-	-	-	-	-	-	-	-	700	-
1c.1.3	Interim survey prior to dormancy	-	-	-	-	-	-	733	220	953	953	-	-	-	-	-	-	-	-	18,863	-
1c.1.4	Secure building accesses									a											
1c.1.5	Prepare & submit interim report	-	-	-	-	-	-	68	10	79	79	-	-	-	-	-	-	-	-	-	583

Table C-1
Vermont Yankee Nuclear Power Station
Scenario 1: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2045
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
1c.1	Subtotal Period 1c Activity Costs	-	498	-	-	-	-	801	305	1,604	1,604	-	-	-	-	-	-	-	-	22,563	583
Period 1c Collateral Costs																					
1c.3.1	Process decommissioning water waste	196	-	66	501	-	498	-	304	1,565	1,565	-	-	-	1,238	-	-	-	74,305	241	-
1c.3.3	Small tool allowance	-	3	-	-	-	-	-	0	4	4	-	-	-	-	-	-	-	-	-	-
1c.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	8,216	1,232	9,449	-	9,449	-	-	-	-	-	-	-	-	-
1c.3	Subtotal Period 1c Collateral Costs	196	3	66	501	-	498	8,216	1,537	11,017	1,568	9,449	-	-	1,238	-	-	-	74,305	241	-
Period 1c Period-Dependent Costs																					
1c.4.1	Insurance	-	-	-	-	-	-	106	11	117	117	-	-	-	-	-	-	-	-	-	-
1c.4.2	Property taxes	-	-	-	-	-	-	2	0	2	2	-	-	-	-	-	-	-	-	-	-
1c.4.3	Health physics supplies	-	162	-	-	-	-	-	40	202	202	-	-	-	-	-	-	-	-	-	-
1c.4.4	Heavy equipment rental	-	86	-	-	-	-	-	13	99	99	-	-	-	-	-	-	-	-	-	-
1c.4.5	Disposal of DAW generated	-	-	3	2	-	12	-	4	20	20	-	-	-	155	-	-	-	3,106	5	-
1c.4.6	Plant energy budget	-	-	-	-	-	-	299	45	344	344	-	-	-	-	-	-	-	-	-	-
1c.4.7	NRC Fees	-	-	-	-	-	-	148	15	163	163	-	-	-	-	-	-	-	-	-	-
1c.4.8	Emergency Planning Fees	-	-	-	-	-	-	1,044	104	1,148	-	1,148	-	-	-	-	-	-	-	-	-
1c.4.9	Site O&M	-	-	-	-	-	-	53	8	61	61	-	-	-	-	-	-	-	-	-	-
1c.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	194	29	224	-	224	-	-	-	-	-	-	-	-	-
1c.4.11	ISFSI Operating Costs	-	-	-	-	-	-	23	3	26	-	26	-	-	-	-	-	-	-	-	-
1c.4.12	Corporate A&G	-	-	-	-	-	-	1,102	165	1,267	1,267	-	-	-	-	-	-	-	-	-	-
1c.4.13	Security Staff Cost	-	-	-	-	-	-	1,365	205	1,569	1,569	-	-	-	-	-	-	-	-	-	40,123
1c.4.14	Utility Staff Cost	-	-	-	-	-	-	6,139	921	7,060	7,060	-	-	-	-	-	-	-	-	-	107,880
1c.4	Subtotal Period 1c Period-Dependent Costs	-	248	3	2	-	12	10,474	1,563	12,302	10,904	1,398	-	-	155	-	-	-	3,106	5	148,003
1c.0	TOTAL PERIOD 1c COST	196	749	69	504	-	509	19,492	3,405	24,923	14,076	10,847	-	-	1,394	-	-	-	77,411	22,810	148,586
PERIOD 1 TOTALS		5,997	3,525	543	2,525	1,692	2,913	120,367	22,399	159,962	108,336	51,626	-	3,288	16,691	-	-	-	839,391	89,384	911,759
PERIOD 2a - SAFSTOR Dormancy with Wet Spent Fuel Storage																					
Period 2a Direct Decommissioning Activities																					
2a.1.1	Quarterly Inspection									a											
2a.1.2	Semi-annual environmental survey									a											
2a.1.3	Prepare reports									a											
2a.1.4	Bituminous roof replacement	-	-	-	-	-	-	231	35	265	265	-	-	-	-	-	-	-	-	-	-
2a.1.5	Maintenance supplies	-	-	-	-	-	-	539	135	673	673	-	-	-	-	-	-	-	-	-	-
2a.1	Subtotal Period 2a Activity Costs	-	-	-	-	-	-	769	169	938	938	-	-	-	-	-	-	-	-	-	-
Period 2a Collateral Costs																					
2a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	54,542	8,181	62,724	-	62,724	-	-	-	-	-	-	-	-	-
2a.3	Subtotal Period 2a Collateral Costs	-	-	-	-	-	-	54,542	8,181	62,724	-	62,724	-	-	-	-	-	-	-	-	-
Period 2a Period-Dependent Costs																					
2a.4.1	Insurance	-	-	-	-	-	-	1,668	167	1,835	1,676	159	-	-	-	-	-	-	-	-	-
2a.4.2	Property taxes	-	-	-	-	-	-	27	3	30	30	-	-	-	-	-	-	-	-	-	-
2a.4.3	Health physics supplies	-	555	-	-	-	-	-	139	694	694	-	-	-	-	-	-	-	-	-	-
2a.4.4	Disposal of DAW generated	-	-	16	15	-	68	-	21	120	120	-	-	-	918	-	-	-	18,368	30	-
2a.4.5	Plant energy budget	-	-	-	-	-	-	936	140	1,077	538	538	-	-	-	-	-	-	-	-	-
2a.4.6	NRC Fees	-	-	-	-	-	-	833	83	916	916	-	-	-	-	-	-	-	-	-	-
2a.4.7	Emergency Planning Fees	-	-	-	-	-	-	16,349	1,635	17,984	-	17,984	-	-	-	-	-	-	-	-	-
2a.4.8	Site O&M	-	-	-	-	-	-	830	124	954	954	-	-	-	-	-	-	-	-	-	-
2a.4.9	Spent Fuel Pool O&M	-	-	-	-	-	-	3,046	457	3,503	-	3,503	-	-	-	-	-	-	-	-	-
2a.4.10	ISFSI Operating Costs	-	-	-	-	-	-	357	54	411	-	411	-	-	-	-	-	-	-	-	-
2a.4.11	Corporate A&G	-	-	-	-	-	-	6,204	931	7,135	895	6,240	-	-	-	-	-	-	-	-	-
2a.4.12	Security Staff Cost	-	-	-	-	-	-	15,315	2,297	17,612	2,469	15,143	-	-	-	-	-	-	-	-	443,344
2a.4.13	Utility Staff Cost	-	-	-	-	-	-	19,610	2,941	22,551	4,658	17,893	-	-	-	-	-	-	-	-	328,866
2a.4	Subtotal Period 2a Period-Dependent Costs	-	555	16	15	-	68	65,175	8,992	74,821	12,951	61,871	-	-	918	-	-	-	18,368	30	772,210
2a.0	TOTAL PERIOD 2a COST	-	555	16	15	-	68	120,487	17,343	138,483	13,889	124,594	-	-	918	-	-	-	18,368	30	772,210

Table C-1
Vermont Yankee Nuclear Power Station
Scenario 1: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2045
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 2b - SAFSTOR Dormancy with Dry Spent Fuel Storage																					
Period 2b Direct Decommissioning Activities																					
2b.1.1	Quarterly Inspection									a											
2b.1.2	Semi-annual environmental survey									a											
2b.1.3	Prepare reports									a											
2b.1.4	Bituminous roof replacement	-	-	-	-	-	-	1,635	245	1,880	1,880	-	-	-	-	-	-	-	-	-	-
2b.1.5	Maintenance supplies	-	-	-	-	-	-	3,818	955	4,773	4,773	-	-	-	-	-	-	-	-	-	-
2b.1	Subtotal Period 2b Activity Costs	-	-	-	-	-	-	5,454	1,200	6,653	6,653	-	-	-	-	-	-	-	-	-	-
Period 2b Additional Costs																					
2b.2.1	Remove spent fuel racks	576	67	132	260	-	1,908	-	834	3,776	3,776	-	-	-	8,439	-	-	-	717,311	1,332	-
2b.2	Subtotal Period 2b Additional Costs	576	67	132	260	-	1,908	-	834	3,776	3,776	-	-	-	8,439	-	-	-	717,311	1,332	-
Period 2b Collateral Costs																					
2b.3.1	Small tool allowance	-	8	-	-	-	-	-	1	9	9	-	-	-	-	-	-	-	-	-	-
2b.3.2	Spent Fuel Capital and Transfer	-	-	-	-	-	-	9,198	1,380	10,578	-	10,578	-	-	-	-	-	-	-	-	-
2b.3	Subtotal Period 2b Collateral Costs	-	8	-	-	-	-	9,198	1,381	10,587	9	10,578	-	-	-	-	-	-	-	-	-
Period 2b Period-Dependent Costs																					
2b.4.1	Insurance	-	-	-	-	-	-	11,042	1,104	12,147	(0)	12,147	-	-	-	-	-	-	-	-	-
2b.4.2	Property taxes	-	-	-	-	-	-	192	19	212	212	-	-	-	-	-	-	-	-	-	-
2b.4.3	Health physics supplies	-	1,913	-	-	-	-	-	478	2,392	2,392	-	-	-	-	-	-	-	-	-	-
2b.4.4	Disposal of DAW generated	-	-	54	50	-	232	-	71	407	407	-	-	-	3,128	-	-	-	62,565	102	-
2b.4.5	Plant energy budget	-	-	-	-	-	-	3,320	498	3,818	3,818	-	-	-	-	-	-	-	-	-	-
2b.4.6	NRC Fees	-	-	-	-	-	-	5,556	556	6,112	6,112	-	-	-	-	-	-	-	-	-	-
2b.4.7	Emergency Planning Fees	-	-	-	-	-	-	10,239	1,024	11,263	-	11,263	-	-	-	-	-	-	-	-	-
2b.4.8	Site O&M	-	-	-	-	-	-	5,883	882	6,766	(0)	6,766	-	-	-	-	-	-	-	-	-
2b.4.9	ISFSI Operating Costs	-	-	-	-	-	-	2,532	380	2,912	-	2,912	-	-	-	-	-	-	-	-	-
2b.4.10	Corporate A&G	-	-	-	-	-	-	7,329	1,099	8,428	-	8,428	-	-	-	-	-	-	-	-	-
2b.4.11	Security Staff Cost	-	-	-	-	-	-	57,867	8,680	66,547	(0)	66,547	-	-	-	-	-	-	-	-	1,593,926
2b.4.12	Utility Staff Cost	-	-	-	-	-	-	54,971	8,246	63,217	34,180	29,037	-	-	-	-	-	-	-	-	944,549
2b.4	Subtotal Period 2b Period-Dependent Costs	-	1,913	54	50	-	232	158,932	23,038	184,219	47,120	137,099	-	-	3,128	-	-	-	62,565	102	2,538,474
2b.0	TOTAL PERIOD 2b COST	576	1,989	186	310	-	2,140	173,583	26,452	205,236	57,559	147,676	-	-	11,567	-	-	-	779,876	1,434	2,538,474
PERIOD 2c - SAFSTOR Dormancy without Spent Fuel Storage																					
Period 2c Direct Decommissioning Activities																					
2c.1.1	Quarterly Inspection									a											
2c.1.2	Semi-annual environmental survey									a											
2c.1.3	Prepare reports									a											
2c.1.4	Bituminous roof replacement	-	-	-	-	-	-	1,170	176	1,346	1,346	-	-	-	-	-	-	-	-	-	-
2c.1.5	Maintenance supplies	-	-	-	-	-	-	2,733	683	3,416	3,416	-	-	-	-	-	-	-	-	-	-
2c.1	Subtotal Period 2c Activity Costs	-	-	-	-	-	-	3,903	859	4,761	4,761	-	-	-	-	-	-	-	-	-	-
Period 2c Period-Dependent Costs																					
2c.4.1	Insurance	-	-	-	-	-	-	7,733	773	8,507	8,507	-	-	-	-	-	-	-	-	-	-
2c.4.2	Property taxes	-	-	-	-	-	-	138	14	151	151	-	-	-	-	-	-	-	-	-	-
2c.4.3	Health physics supplies	-	1,285	-	-	-	-	-	321	1,606	1,606	-	-	-	-	-	-	-	-	-	-
2c.4.4	Disposal of DAW generated	-	-	36	33	-	153	-	47	268	268	-	-	-	2,062	-	-	-	41,234	67	-
2c.4.5	Plant energy budget	-	-	-	-	-	-	2,376	356	2,732	2,732	-	-	-	-	-	-	-	-	-	-
2c.4.6	NRC Fees	-	-	-	-	-	-	3,557	356	3,912	3,912	-	-	-	-	-	-	-	-	-	-
2c.4.7	Site O&M	-	-	-	-	-	-	4,210	632	4,842	4,842	-	-	-	-	-	-	-	-	-	-
2c.4.8	Corporate A&G	-	-	-	-	-	-	3,948	592	4,540	4,540	-	-	-	-	-	-	-	-	-	-
2c.4.9	Security Staff Cost	-	-	-	-	-	-	10,894	1,634	12,528	12,528	-	-	-	-	-	-	-	-	-	633,686
2c.4.10	Utility Staff Cost	-	-	-	-	-	-	20,553	3,083	23,635	23,635	-	-	-	-	-	-	-	-	-	369,650
2c.4	Subtotal Period 2c Period-Dependent Costs	-	1,285	36	33	-	153	53,407	7,808	62,722	62,722	-	-	-	2,062	-	-	-	41,234	67	1,003,336
2c.0	TOTAL PERIOD 2c COST	-	1,285	36	33	-	153	57,310	8,666	67,483	67,483	-	-	-	2,062	-	-	-	41,234	67	1,003,336
PERIOD 2 TOTALS		576	3,829	237	358	-	2,361	351,380	52,461	411,202	138,932	272,271	-	-	14,547	-	-	-	839,478	1,531	4,314,020

Table C-1
Vermont Yankee Nuclear Power Station
Scenario 1: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2045
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 3a - Reactivate Site Following SAFSTOR Dormancy																					
Period 3a Direct Decommissioning Activities																					
3a.1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
3a.1.2	Review plant dwgs & specs.	-	-	-	-	-	-	538	81	619	619	-	-	-	-	-	-	-	-	-	4,600
3a.1.3	Perform detailed rad survey									a											
3a.1.4	End product description	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
3a.1.5	Detailed by-product inventory	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
3a.1.6	Define major work sequence	-	-	-	-	-	-	878	132	1,010	1,010	-	-	-	-	-	-	-	-	-	7,500
3a.1.7	Perform SER and EA	-	-	-	-	-	-	363	54	417	417	-	-	-	-	-	-	-	-	-	3,100
3a.1.8	Perform Site-Specific Cost Study	-	-	-	-	-	-	585	88	673	673	-	-	-	-	-	-	-	-	-	5,000
3a.1.9	Prepare/submit License Termination Plan	-	-	-	-	-	-	479	72	551	551	-	-	-	-	-	-	-	-	-	4,096
3a.1.10	Receive NRC approval of termination plan									a											
Activity Specifications																					
3a.1.11.1	Re-activate plant & temporary facilities	-	-	-	-	-	-	863	129	992	893	-	99	-	-	-	-	-	-	-	7,370
3a.1.11.2	Plant systems	-	-	-	-	-	-	488	73	561	505	-	56	-	-	-	-	-	-	-	4,167
3a.1.11.3	Reactor internals	-	-	-	-	-	-	831	125	956	956	-	-	-	-	-	-	-	-	-	7,100
3a.1.11.4	Reactor vessel	-	-	-	-	-	-	761	114	875	875	-	-	-	-	-	-	-	-	-	6,500
3a.1.11.5	Sacrificial shield	-	-	-	-	-	-	59	9	67	67	-	-	-	-	-	-	-	-	-	500
3a.1.11.6	Moisture separators/reheaters	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
3a.1.11.7	Reinforced concrete	-	-	-	-	-	-	187	28	215	108	-	108	-	-	-	-	-	-	-	1,600
3a.1.11.8	Main Turbine	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
3a.1.11.9	Main Condensers	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
3a.1.11.10	Pressure suppression structure	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
3a.1.11.11	Drywell	-	-	-	-	-	-	187	28	215	215	-	-	-	-	-	-	-	-	-	1,600
3a.1.11.12	Plant structures & buildings	-	-	-	-	-	-	365	55	420	210	-	210	-	-	-	-	-	-	-	3,120
3a.1.11.13	Waste management	-	-	-	-	-	-	538	81	619	619	-	-	-	-	-	-	-	-	-	4,600
3a.1.11.14	Facility & site closeout	-	-	-	-	-	-	105	16	121	61	-	61	-	-	-	-	-	-	-	900
3a.1.11	Total	-	-	-	-	-	-	5,224	784	6,008	5,474	-	534	-	-	-	-	-	-	-	44,633
Planning & Site Preparations																					
3a.1.12	Prepare dismantling sequence	-	-	-	-	-	-	281	42	323	323	-	-	-	-	-	-	-	-	-	2,400
3a.1.13	Plant prep. & temp. svces	-	-	-	-	-	-	2,800	420	3,220	3,220	-	-	-	-	-	-	-	-	-	-
3a.1.14	Design water clean-up system	-	-	-	-	-	-	164	25	188	188	-	-	-	-	-	-	-	-	-	1,400
3a.1.15	Rigging/Cont. Cntrl Envlps/tooling/etc.	-	-	-	-	-	-	2,200	330	2,530	2,530	-	-	-	-	-	-	-	-	-	-
3a.1.16	Procure casks/liners & containers	-	-	-	-	-	-	144	22	166	166	-	-	-	-	-	-	-	-	-	1,230
3a.1	Subtotal Period 3a Activity Costs	-	-	-	-	-	-	14,078	2,112	16,190	15,656	-	534	-	-	-	-	-	-	-	77,559
Period 3a Period-Dependent Costs																					
3a.4.1	Insurance	-	-	-	-	-	-	382	38	420	420	-	-	-	-	-	-	-	-	-	-
3a.4.2	Property taxes	-	-	-	-	-	-	7	1	7	7	-	-	-	-	-	-	-	-	-	-
3a.4.3	Health physics supplies	-	303	-	-	-	-	-	76	379	379	-	-	-	-	-	-	-	-	-	-
3a.4.4	Heavy equipment rental	-	338	-	-	-	-	-	51	389	389	-	-	-	-	-	-	-	-	-	-
3a.4.5	Disposal of DAW generated	-	-	9	8	-	38	-	12	67	67	-	-	-	514	-	-	-	10,287	17	-
3a.4.6	Plant energy budget	-	-	-	-	-	-	1,173	176	1,349	1,349	-	-	-	-	-	-	-	-	-	-
3a.4.7	NRC Fees	-	-	-	-	-	-	262	26	289	289	-	-	-	-	-	-	-	-	-	-
3a.4.8	Site O&M	-	-	-	-	-	-	208	31	239	239	-	-	-	-	-	-	-	-	-	-
3a.4.9	Corporate A&G	-	-	-	-	-	-	1,887	283	2,170	2,170	-	-	-	-	-	-	-	-	-	-
3a.4.10	Security Staff Cost	-	-	-	-	-	-	1,121	168	1,289	1,289	-	-	-	-	-	-	-	-	-	65,179
3a.4.11	Utility Staff Cost	-	-	-	-	-	-	14,940	2,241	17,181	17,181	-	-	-	-	-	-	-	-	-	258,629
3a.4	Subtotal Period 3a Period-Dependent Costs	-	641	9	8	-	38	19,979	3,103	23,778	23,778	-	-	-	514	-	-	-	10,287	17	323,807
3a.0	TOTAL PERIOD 3a COST	-	641	9	8	-	38	34,057	5,214	39,968	39,435	-	534	-	514	-	-	-	10,287	17	401,366
PERIOD 3b - Decommissioning Preparations																					
Period 3b Direct Decommissioning Activities																					
Detailed Work Procedures																					
3b.1.1.1	Plant systems	-	-	-	-	-	-	554	83	637	573	-	64	-	-	-	-	-	-	-	4,733

Table C-1
Vermont Yankee Nuclear Power Station
Scenario 1: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2045
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Detailed Work Procedures (continued)																					
3b.1.1.2	Reactor internals	-	-	-	-	-	-	468	70	538	538	-	-	-	-	-	-	-	-	-	4,000
3b.1.1.3	Remaining buildings	-	-	-	-	-	-	158	24	182	45	-	136	-	-	-	-	-	-	-	1,350
3b.1.1.4	CRD housings & NIs	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
3b.1.1.5	Incore instrumentation	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
3b.1.1.6	Removal primary containment	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
3b.1.1.7	Reactor vessel	-	-	-	-	-	-	425	64	489	489	-	-	-	-	-	-	-	-	-	3,630
3b.1.1.8	Facility closeout	-	-	-	-	-	-	140	21	162	81	-	81	-	-	-	-	-	-	-	1,200
3b.1.1.9	Sacrificial shield	-	-	-	-	-	-	140	21	162	162	-	-	-	-	-	-	-	-	-	1,200
3b.1.1.10	Reinforced concrete	-	-	-	-	-	-	117	18	135	67	-	67	-	-	-	-	-	-	-	1,000
3b.1.1.11	Main Turbine	-	-	-	-	-	-	243	37	280	280	-	-	-	-	-	-	-	-	-	2,080
3b.1.1.12	Main Condensers	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
3b.1.1.13	Moisture separators & reheaters	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
3b.1.1.14	Radwaste building	-	-	-	-	-	-	320	48	367	331	-	37	-	-	-	-	-	-	-	2,730
3b.1.1.15	Reactor building	-	-	-	-	-	-	320	48	367	331	-	37	-	-	-	-	-	-	-	2,730
3b.1.1	Total	-	-	-	-	-	-	3,832	575	4,407	3,986	-	422	-	-	-	-	-	-	-	32,741
3b.1	Subtotal Period 3b Activity Costs	-	-	-	-	-	-	3,832	575	4,407	3,986	-	422	-	-	-	-	-	-	-	32,741
Period 3b Additional Costs																					
3b.2.1	Site Characterization	-	-	-	-	-	-	3,706	1,112	4,818	4,818	-	-	-	-	-	-	-	-	-	-
3b.2	Subtotal Period 3b Additional Costs	-	-	-	-	-	-	3,706	1,112	4,818	4,818	-	-	-	-	-	-	-	-	-	-
Period 3b Collateral Costs																					
3b.3.1	Decon equipment	667	-	-	-	-	-	-	100	767	767	-	-	-	-	-	-	-	-	-	-
3b.3.2	DOC staff relocation expenses	-	-	-	-	-	-	1,030	154	1,184	1,184	-	-	-	-	-	-	-	-	-	-
3b.3.3	Pipe cutting equipment	-	1,100	-	-	-	-	-	165	1,265	1,265	-	-	-	-	-	-	-	-	-	-
3b.3	Subtotal Period 3b Collateral Costs	667	1,100	-	-	-	-	1,030	419	3,216	3,216	-	-	-	-	-	-	-	-	-	-
Period 3b Period-Dependent Costs																					
3b.4.1	Decon supplies	21	-	-	-	-	-	-	5	26	26	-	-	-	-	-	-	-	-	-	-
3b.4.2	Insurance	-	-	-	-	-	-	212	21	233	233	-	-	-	-	-	-	-	-	-	-
3b.4.3	Property taxes	-	-	-	-	-	-	3	0	4	4	-	-	-	-	-	-	-	-	-	-
3b.4.4	Health physics supplies	-	169	-	-	-	-	-	42	212	212	-	-	-	-	-	-	-	-	-	-
3b.4.5	Heavy equipment rental	-	172	-	-	-	-	-	26	197	197	-	-	-	-	-	-	-	-	-	-
3b.4.6	Disposal of DAW generated	-	-	5	5	-	22	-	7	38	38	-	-	-	295	-	-	-	5,898	10	-
3b.4.7	Plant energy budget	-	-	-	-	-	-	595	89	684	684	-	-	-	-	-	-	-	-	-	-
3b.4.8	NRC Fees	-	-	-	-	-	-	133	13	146	146	-	-	-	-	-	-	-	-	-	-
3b.4.9	Site O&M	-	-	-	-	-	-	105	16	121	121	-	-	-	-	-	-	-	-	-	-
3b.4.10	Corporate A&G	-	-	-	-	-	-	1,045	157	1,202	1,202	-	-	-	-	-	-	-	-	-	-
3b.4.11	Security Staff Cost	-	-	-	-	-	-	568	85	653	653	-	-	-	-	-	-	-	-	-	33,036
3b.4.12	DOC Staff Cost	-	-	-	-	-	-	5,092	764	5,856	5,856	-	-	-	-	-	-	-	-	-	59,200
3b.4.13	Utility Staff Cost	-	-	-	-	-	-	7,572	1,136	8,708	8,708	-	-	-	-	-	-	-	-	-	131,086
3b.4	Subtotal Period 3b Period-Dependent Costs	21	341	5	5	-	22	15,326	2,361	18,080	18,080	-	-	-	295	-	-	-	5,898	10	223,321
3b.0	TOTAL PERIOD 3b COST	687	1,441	5	5	-	22	23,894	4,468	30,522	30,100	-	422	-	295	-	-	-	5,898	10	256,062
PERIOD 3 TOTALS		687	2,082	14	13	-	60	57,951	9,682	70,490	69,535	-	955	-	809	-	-	-	16,185	26	657,428
PERIOD 4a - Large Component Removal																					
Period 4a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
4a.1.1.1	Recirculation System Piping & Valves	22	71	20	28	89	185	-	94	509	509	-	-	575	608	-	-	-	133,340	1,761	-
4a.1.1.2	Recirculation Pumps & Motors	8	37	13	38	85	134	-	67	382	382	-	-	1,075	894	-	-	-	111,100	946	-
4a.1.1.3	CRDMs & NIs Removal	19	80	234	85	-	178	-	110	706	706	-	-	-	2,561	-	-	-	67,063	1,879	-
4a.1.1.4	Reactor Vessel Internals	81	2,632	6,802	1,287	-	4,707	253	6,428	22,190	22,190	-	-	-	1,002	1,377	230	-	258,030	28,033	1,253
4a.1.1.5	Vessel & Internals GTCC Disposal	-	-	-	-	-	4,926	-	739	5,665	5,665	-	-	-	-	-	-	1,785	347,940	-	-
4a.1.1.6	Reactor Vessel	-	6,294	1,513	674	-	2,889	253	6,749	18,372	18,372	-	-	-	12,772	-	-	-	1,292,271	28,033	1,253
4a.1.1	Totals	130	9,114	8,582	2,112	174	13,019	505	14,188	47,823	47,823	-	-	1,650	17,836	1,377	230	1,785	2,209,743	60,652	2,507

Table C-1
Vermont Yankee Nuclear Power Station
Scenario 1: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2045
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Removal of Major Equipment																					
4a.1.2	Main Turbine/Generator	-	217	1,149	546	4,201	-	-	881	6,993	6,993	-	-	66,677	-	-	-	-	3,000,454	3,897	-
4a.1.3	Main Condensers	-	475	645	306	2,358	-	-	583	4,366	4,366	-	-	37,422	-	-	-	-	1,684,000	8,400	-
Cascading Costs from Clean Building Demolition																					
4a.1.4.1	Reactor	-	701	-	-	-	-	-	105	806	806	-	-	-	-	-	-	-	-	8,238	-
4a.1.4.2	AOG	-	85	-	-	-	-	-	13	98	98	-	-	-	-	-	-	-	-	1,032	-
4a.1.4.3	Equipment Lock	-	4	-	-	-	-	-	1	5	5	-	-	-	-	-	-	-	-	55	-
4a.1.4.4	Misc Cont Yard Structures	-	8	-	-	-	-	-	1	9	9	-	-	-	-	-	-	-	-	105	-
4a.1.4.5	North Warehouse	-	1	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	16	-
4a.1.4.6	Radwaste	-	26	-	-	-	-	-	4	30	30	-	-	-	-	-	-	-	-	318	-
4a.1.4.7	Radwaste Compactor	-	0	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	4	-
4a.1.4.8	Turbine	-	237	-	-	-	-	-	36	273	273	-	-	-	-	-	-	-	-	2,999	-
4a.1.4.9	Vent Stack	-	0	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	5	-
4a.1.4	Totals	-	1,062	-	-	-	-	-	159	1,222	1,222	-	-	-	-	-	-	-	-	12,771	-
Reactor Building System Components																					
4a.1.5.1	RX-BLD-213-2_2	-	134	6	18	85	54	-	63	360	360	-	-	1,492	237	-	-	-	80,793	2,496	-
4a.1.5.2	RX-BLD-213-3_2	-	118	4	12	59	29	-	48	270	270	-	-	1,043	130	-	-	-	53,400	2,210	-
4a.1.5.3	RX-BLD-213-4_2	-	123	3	8	37	23	-	44	238	238	-	-	658	102	-	-	-	35,392	2,305	-
4a.1.5.4	RX-BLD-213-5_2	-	219	16	46	201	144	-	129	755	755	-	-	3,531	637	-	-	-	197,501	4,086	-
4a.1.5.5	RX-BLD-232-2_2	-	111	8	22	93	69	-	63	366	366	-	-	1,640	307	-	-	-	92,729	2,073	-
4a.1.5.6	RX-BLD-232-3_2	-	100	7	20	88	65	-	58	339	339	-	-	1,556	287	-	-	-	87,560	1,875	-
4a.1.5.7	RX-BLD-232-4_2	-	49	1	3	13	8	-	17	91	91	-	-	225	37	-	-	-	12,298	888	-
4a.1.5.8	RX-BLD-232-5_2	-	55	2	5	26	15	-	22	125	125	-	-	449	68	-	-	-	24,053	990	-
4a.1.5.9	RX-BLD-252-10_2	-	9	0	0	2	-	-	3	14	14	-	-	38	-	-	-	-	1,538	170	-
4a.1.5.10	RX-BLD-252-1_2	-	7	0	0	2	-	-	2	10	10	-	-	27	-	-	-	-	1,086	119	-
4a.1.5.11	RX-BLD-252-1_3	-	3	0	0	-	1	-	1	5	5	-	-	-	5	-	-	-	427	52	-
4a.1.5.12	RX-BLD-252-2_2	-	35	2	7	29	23	-	20	116	116	-	-	502	100	-	-	-	28,864	651	-
4a.1.5.13	RX-BLD-252-3_2	-	44	1	3	16	4	-	15	82	82	-	-	276	16	-	-	-	12,590	823	-
4a.1.5.14	RX-BLD-252-3_3	-	2	0	0	-	2	-	1	6	6	-	-	-	10	-	-	-	863	40	-
4a.1.5.15	RX-BLD-252-4_2	-	92	2	13	102	-	-	41	251	251	-	-	1,796	-	-	-	-	72,928	1,733	-
4a.1.5.16	RX-BLD-252-4_3	-	1	0	0	-	1	-	0	2	2	-	-	-	3	-	-	-	234	14	-
4a.1.5.17	RX-BLD-252-5_2	-	229	3	20	156	-	-	84	492	492	-	-	2,738	-	-	-	-	111,209	4,207	-
4a.1.5.18	RX-BLD-252-5_3	-	103	11	13	-	97	-	53	277	277	-	-	-	427	-	-	-	36,281	1,647	-
4a.1.5.19	RX-BLD-252-6_2	-	191	3	15	116	-	-	68	392	392	-	-	2,045	-	-	-	-	83,064	3,496	-
4a.1.5.20	RX-BLD-252-6_3	-	106	12	14	-	104	-	56	292	292	-	-	-	459	-	-	-	39,016	1,712	-
4a.1.5.21	RX-BLD-252-7_2	-	172	1	8	62	-	-	54	297	297	-	-	1,094	-	-	-	-	44,442	3,163	-
4a.1.5.22	RX-BLD-252-8_2	-	52	1	3	26	-	-	18	100	100	-	-	463	-	-	-	-	18,797	954	-
4a.1.5.23	RX-BLD-252-9_2	-	86	1	5	29	7	-	28	156	156	-	-	511	29	-	-	-	23,198	1,579	-
4a.1.5.24	RX-BLD-252-9_3	-	19	2	4	-	27	-	12	65	65	-	-	-	121	-	-	-	10,281	339	-
4a.1.5	Totals	-	2,060	87	240	1,142	673	-	899	5,101	5,101	-	-	20,083	2,977	-	-	-	1,068,545	37,623	-
Turbine Building System Components																					
4a.1.6.1	TURB-BLD-222-10_2	-	97	1	5	42	-	-	31	176	176	-	-	735	-	-	-	-	29,859	1,836	-
4a.1.6.2	TURB-BLD-222-11_2	-	60	1	3	24	-	-	19	106	106	-	-	422	-	-	-	-	17,121	1,115	-
4a.1.6.3	TURB-BLD-222-1_2	-	388	9	53	412	-	-	168	1,030	1,030	-	-	7,245	-	-	-	-	294,230	7,209	-
4a.1.6.4	TURB-BLD-222-2_2	-	302	10	62	475	-	-	157	1,006	1,006	-	-	8,362	-	-	-	-	339,601	5,576	-
4a.1.6.5	TURB-BLD-222-3_2	-	86	3	16	119	-	-	42	265	265	-	-	2,101	-	-	-	-	85,320	1,579	-
4a.1.6.6	TURB-BLD-222-8_2	-	248	2	14	107	-	-	81	452	452	-	-	1,885	-	-	-	-	76,566	4,680	-
4a.1.6.7	TURB-BLD-222-9_2	-	141	11	66	510	-	-	123	851	851	-	-	8,970	-	-	-	-	364,295	2,629	-
4a.1.6.8	TURB-BLD-228-12_2	-	200	2	10	77	-	-	63	352	352	-	-	1,355	-	-	-	-	55,030	3,702	-
4a.1.6.9	TURB-BLD-228-13_2	-	130	1	5	38	-	-	39	212	212	-	-	666	-	-	-	-	27,061	2,432	-
4a.1.6.10	TURB-BLD-228-1_2	-	124	2	12	90	-	-	46	274	274	-	-	1,584	-	-	-	-	64,321	2,279	-
4a.1.6.11	TURB-BLD-228-2_2	-	365	14	84	650	-	-	203	1,317	1,317	-	-	11,437	-	-	-	-	464,451	6,827	-
4a.1.6.12	TURB-BLD-228-3_2	-	310	7	41	312	-	-	131	800	800	-	-	5,486	-	-	-	-	222,807	5,785	-
4a.1.6.13	TURB-BLD-228-4_2	-	345	8	47	362	-	-	148	910	910	-	-	6,374	-	-	-	-	258,860	6,410	-
4a.1.6.14	TURB-BLD-228-5_2	-	163	4	27	207	-	-	76	478	478	-	-	3,648	-	-	-	-	148,129	3,001	-
4a.1.6.15	TURB-BLD-228-6_2	-	135	4	23	175	-	-	64	400	400	-	-	3,075	-	-	-	-	124,888	2,491	-
4a.1.6	Totals	-	3,093	78	468	3,602	-	-	1,391	8,632	8,632	-	-	63,347	-	-	-	-	2,572,537	57,553	-

Table C-1
Vermont Yankee Nuclear Power Station
Scenario 1: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2045
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Augmented Offgas Building System Components																					
4a.1.7.1	AOG-BLD-FL1-1_2	-	31	0	2	17	-	-	11	61	61	-	-	293	-	-	-	-	11,904	569	-
4a.1.7.2	AOG-BLD-FL1-2_2	-	95	2	13	98	-	-	40	248	248	-	-	1,724	-	-	-	-	70,026	1,741	-
4a.1.7.3	AOG-BLD-FL1-3_2	-	94	2	12	89	-	-	39	236	236	-	-	1,572	-	-	-	-	63,838	1,690	-
4a.1.7.4	AOG-BLD-FL1-4_2	-	99	2	9	72	-	-	37	219	219	-	-	1,260	-	-	-	-	51,189	1,771	-
4a.1.7.5	AOG-BLD-FL1-5_2	-	98	1	6	48	-	-	33	186	186	-	-	849	-	-	-	-	34,481	1,796	-
4a.1.7.6	AOG-BLD-FL2-1_2	-	61	1	7	56	-	-	25	150	150	-	-	990	-	-	-	-	40,198	1,108	-
4a.1.7.7	AOG-BLD-FL2-2_2	-	7	0	0	3	-	-	2	13	13	-	-	55	-	-	-	-	2,232	133	-
4a.1.7.8	AOG-BLD-FL2-3_2	-	7	0	0	3	-	-	2	12	12	-	-	52	-	-	-	-	2,128	121	-
4a.1.7.9	AOG-BLD-FL2-4_2	-	52	1	7	55	-	-	22	138	138	-	-	965	-	-	-	-	39,196	947	-
4a.1.7.10	AOG-BLD-FL2-5_2	-	7	0	0	2	-	-	2	11	11	-	-	30	-	-	-	-	1,212	125	-
4a.1.7.11	AOG-BLD-FL2-6_2	-	6	0	0	3	-	-	2	12	12	-	-	52	-	-	-	-	2,128	114	-
4a.1.7.12	AOG-BLD-FL2-7_2	-	30	0	1	10	-	-	9	51	51	-	-	176	-	-	-	-	7,154	539	-
4a.1.7.13	AOG-BLD-FL2-8_2	-	15	0	1	6	-	-	5	26	26	-	-	101	-	-	-	-	4,118	263	-
4a.1.7.14	AOG-BLD-FL2-9_2	-	95	2	13	98	-	-	41	248	248	-	-	1,715	-	-	-	-	69,653	1,717	-
4a.1.7.15	AOG-BLDG-1_2	-	48	2	5	14	20	-	20	108	108	-	-	250	86	-	-	-	17,504	862	-
4a.1.7.16	AOG-BLDG-2_2	-	168	1	3	7	14	-	47	240	240	-	-	128	66	-	-	-	10,462	2,484	-
4a.1.7.17	AOG-BLDG-PENT_2	-	34	0	3	21	-	-	12	71	71	-	-	377	-	-	-	-	15,291	605	-
4a.1.7.18	AOG-BLDG-RF_2	-	73	2	10	78	-	-	32	195	195	-	-	1,375	-	-	-	-	55,841	1,292	-
4a.1.7	Totals	-	1,018	17	93	680	34	-	381	2,223	2,223	-	-	11,965	152	-	-	-	498,555	17,875	-
4a.1.8	Scaffolding in support of decommissioning	-	593	25	12	92	-	-	166	888	888	-	-	1,458	-	-	-	-	65,595	11,723	-
4a.1	Subtotal Period 4a Activity Costs	130	17,633	10,583	3,776	12,248	13,725	505	18,649	77,249	77,249	-	-	202,602	20,965	1,377	230	1,785	11,099,430	210,494	2,507
Period 4a Additional Costs																					
4a.2.1	Retired Low Presure Turbine Rotors	-	-	31	19	1,868	-	-	286	2,204	2,204	-	-	2,723	-	-	-	-	1,334,256	640	-
4a.2	Subtotal Period 4a Additional Costs	-	-	31	19	1,868	-	-	286	2,204	2,204	-	-	2,723	-	-	-	-	1,334,256	640	-
Period 4a Collateral Costs																					
4a.3.1	Process decommissioning water waste	5	-	4	33	-	33	-	16	93	93	-	-	-	83	-	-	-	4,966	16	-
4a.3.3	Small tool allowance	-	154	-	-	-	-	-	23	177	159	-	18	-	-	-	-	-	-	-	-
4a.3	Subtotal Period 4a Collateral Costs	5	154	4	33	-	33	-	39	269	252	-	18	-	83	-	-	-	4,966	16	-
Period 4a Period-Dependent Costs																					
4a.4.1	Decon supplies	52	-	-	-	-	-	-	13	65	65	-	-	-	-	-	-	-	-	-	-
4a.4.2	Insurance	-	-	-	-	-	-	534	53	587	587	-	-	-	-	-	-	-	-	-	-
4a.4.3	Property taxes	-	-	-	-	-	-	9	1	10	9	-	1	-	-	-	-	-	-	-	-
4a.4.4	Health physics supplies	-	1,114	-	-	-	-	-	279	1,393	1,393	-	-	-	-	-	-	-	-	-	-
4a.4.5	Heavy equipment rental	-	1,880	-	-	-	-	-	282	2,163	2,163	-	-	-	-	-	-	-	-	-	-
4a.4.6	Disposal of DAW generated	-	-	65	61	-	279	-	85	490	490	-	-	-	3,764	-	-	-	75,278	123	-
4a.4.7	Plant energy budget	-	-	-	-	-	-	1,423	213	1,636	1,636	-	-	-	-	-	-	-	-	-	-
4a.4.8	NRC Fees	-	-	-	-	-	-	639	64	703	703	-	-	-	-	-	-	-	-	-	-
4a.4.9	Site O&M	-	-	-	-	-	-	265	40	305	305	-	-	-	-	-	-	-	-	-	-
4a.4.10	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	495	74	569	569	-	-	-	-	-	-	-	-	-	-
4a.4.11	Corporate A&G	-	-	-	-	-	-	2,626	394	3,020	3,020	-	-	-	-	-	-	-	-	-	-
4a.4.12	Security Staff Cost	-	-	-	-	-	-	1,431	215	1,645	1,645	-	-	-	-	-	-	-	-	-	83,214
4a.4.13	DOC Staff Cost	-	-	-	-	-	-	15,540	2,331	17,871	17,871	-	-	-	-	-	-	-	-	-	183,737
4a.4.14	Utility Staff Cost	-	-	-	-	-	-	19,204	2,881	22,085	22,085	-	-	-	-	-	-	-	-	-	332,857
4a.4	Subtotal Period 4a Period-Dependent Costs	52	2,995	65	61	-	279	42,165	6,925	52,541	52,540	-	1	-	3,764	-	-	-	75,278	123	599,809
4a.0	TOTAL PERIOD 4a COST	187	20,782	10,683	3,889	14,116	14,038	42,670	25,899	132,263	132,244	-	19	205,325	24,812	1,377	230	1,785	12,513,930	211,273	602,315
PERIOD 4b - Site Decontamination																					
Reactor Building System Components																					
4b.1.2.1	RX-BLD-213-1_2	-	1,048	30	157	1,150	58	-	475	2,918	2,918	-	-	20,227	255	-	-	-	843,080	21,042	-
4b.1.2.2	RX-BLD-213-1_3	-	50	7	12	-	90	-	38	197	197	-	-	-	397	-	-	-	33,774	932	-
4b.1.2.3	RX-BLD-232-1_2	-	464	34	98	405	331	-	277	1,609	1,609	-	-	7,129	1,463	-	-	-	413,865	8,461	-
4b.1.2.4	RX-BLD-232-1_3	-	22	2	3	-	23	-	12	63	63	-	-	-	103	-	-	-	8,738	374	-
4b.1.2.5	RX-BLD-280-1_2	-	22	0	1	8	-	-	7	38	38	-	-	143	-	-	-	-	5,794	415	-
4b.1.2.6	RX-BLD-280-1_3	-	48	4	7	-	53	-	27	139	139	-	-	-	234	-	-	-	19,900	903	-

Table C-1
Vermont Yankee Nuclear Power Station
Scenario 1: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2045
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Reactor Building System Components (continued)																					
4b.1.2.7	RX-BLD-280-2_2	-	27	1	2	8	8	-	10	57	57	-	-	147	37	-	-	-	9,122	491	-
4b.1.2.8	RX-BLD-280-2_3	-	72	13	24	-	177	-	67	354	354	-	-	-	785	-	-	-	66,718	1,359	-
4b.1.2.9	RX-BLD-280-3_2	-	191	5	31	235	-	-	88	550	550	-	-	4,139	-	-	-	-	168,090	3,467	-
4b.1.2.10	RX-BLD-280-4_2	-	79	1	5	39	-	-	26	150	150	-	-	692	-	-	-	-	28,115	1,430	-
4b.1.2.11	RX-BLD-280-5_2	-	161	2	10	74	-	-	53	299	299	-	-	1,303	-	-	-	-	52,897	2,944	-
4b.1.2.12	RX-BLD-280-6_2	-	175	2	10	76	-	-	57	319	319	-	-	1,336	-	-	-	-	54,249	3,219	-
4b.1.2.13	RX-BLD-280-7_2	-	142	3	19	144	-	-	60	369	369	-	-	2,538	-	-	-	-	103,081	2,587	-
4b.1.2.14	RX-BLD-280-ROOF_2	-	26	2	11	86	-	-	21	147	147	-	-	1,519	-	-	-	-	61,692	476	-
4b.1.2.15	RX-BLD-303-1_2	-	39	1	3	16	9	-	15	83	83	-	-	279	38	-	-	-	14,546	749	-
4b.1.2.16	RX-BLD-303-1_3	-	134	25	40	-	295	-	116	610	610	-	-	-	1,307	-	-	-	111,075	2,513	-
4b.1.2.17	RX-BLD-303-2_3	-	57	7	10	-	72	-	34	179	179	-	-	-	381	-	-	-	26,893	1,063	-
4b.1.2.18	RX-BLD-303-3_3	-	20	1	1	-	10	-	8	41	41	-	-	-	45	-	-	-	3,831	381	-
4b.1.2.19	RX-BLD-303-4_2	-	191	4	24	185	-	-	80	484	484	-	-	3,258	-	-	-	-	132,305	3,439	-
4b.1.2.20	RX-BLD-303-5_2	-	20	0	1	7	-	-	6	34	34	-	-	116	-	-	-	-	4,694	376	-
4b.1.2.21	RX-BLD-303-6_2	-	11	0	0	3	-	-	3	18	18	-	-	56	-	-	-	-	2,262	210	-
4b.1.2.22	RX-BLD-303-7_2	-	82	1	9	67	-	-	32	191	191	-	-	1,178	-	-	-	-	47,837	1,510	-
4b.1.2.23	RX-BLD-303-7_3	-	21	3	5	-	35	-	15	79	79	-	-	-	157	-	-	-	13,334	364	-
4b.1.2.24	RX-BLD-303-8_2	-	73	1	5	40	-	-	25	143	143	-	-	697	-	-	-	-	28,313	1,300	-
4b.1.2.25	RX-BLD-318-1_3	-	17	1	2	-	12	-	8	39	39	-	-	-	60	-	-	-	4,371	327	-
4b.1.2.26	RX-BLD-318-2_3	-	33	3	3	-	24	-	15	78	78	-	-	-	106	-	-	-	9,021	585	-
4b.1.2.27	RX-BLD-318-3_3	-	25	2	3	-	21	-	12	62	62	-	-	-	92	-	-	-	7,792	444	-
4b.1.2.28	RX-BLD-318-4_2	-	512	7	45	343	-	-	187	1,093	1,093	-	-	6,034	-	-	-	-	245,044	9,436	-
4b.1.2.29	RX-BLD-318-4_3	-	13	1	2	-	15	-	7	39	39	-	-	-	66	-	-	-	5,636	221	-
4b.1.2.30	RX-BLD-318-5_2	-	90	2	9	72	-	-	35	207	207	-	-	1,260	-	-	-	-	51,163	1,625	-
4b.1.2.31	RX-BLD-318-6_2	-	49	0	3	23	-	-	16	91	91	-	-	408	-	-	-	-	16,581	833	-
4b.1.2.32	RX-BLD-318-7_2	-	40	1	4	29	-	-	15	88	88	-	-	503	-	-	-	-	20,423	722	-
4b.1.2.33	RX-BLD-345-1_3	-	267	1	1	-	7	-	69	345	345	-	-	-	31	-	-	-	2,619	5,186	-
4b.1.2.34	RX-BLD-345-2_3	-	188	0	0	-	2	-	47	237	237	-	-	-	7	-	-	-	631	3,647	-
4b.1.2.35	RX-BLD-345-3_2	-	411	0	1	9	-	-	104	525	525	-	-	152	-	-	-	-	6,168	7,967	-
4b.1.2.36	RX-BLD-345-3_3	-	5	1	1	-	7	-	3	17	17	-	-	-	32	-	-	-	2,760	91	-
4b.1.2.37	RX-BLD-345-4_2	-	5	0	0	1	-	-	1	7	7	-	-	9	-	-	-	-	380	91	-
4b.1.2.38	RX-BLD-345-5_2	-	47	1	4	30	-	-	17	99	99	-	-	535	-	-	-	-	21,741	844	-
4b.1.2.39	RX-BLD-345-6_2	-	60	1	3	24	-	-	19	107	107	-	-	425	-	-	-	-	17,249	1,107	-
4b.1.2.40	RX-BLD-345-7_2	-	35	1	3	25	-	-	13	77	77	-	-	434	-	-	-	-	17,613	638	-
4b.1.2.41	RX-BLD-345-8_2	-	37	0	2	19	-	-	12	70	70	-	-	326	-	-	-	-	13,225	653	-
4b.1.2.42	RX-BLD-DW_2	-	276	8	23	109	68	-	107	592	592	-	-	1,913	303	-	-	-	103,413	5,189	-
4b.1.2.43	RX-BLD-DW_3	-	491	129	197	-	1,446	-	527	2,790	2,790	-	-	-	6,396	-	-	-	543,518	9,060	-
4b.1.2	Totals	-	5,776	306	796	3,227	2,763	-	2,769	15,636	15,636	-	-	56,755	12,297	-	-	-	3,343,552	108,668	-
Turbine Building System Components																					
4b.1.3.1	TURB-BLD-232-1_2	-	127	2	10	77	-	-	45	262	262	-	-	1,363	-	-	-	-	55,351	2,391	-
4b.1.3.2	TURB-BLD-232-2_2	-	225	3	16	125	-	-	78	446	446	-	-	2,193	-	-	-	-	89,075	4,121	-
4b.1.3.3	TURB-BLD-232-3_2	-	143	1	7	55	-	-	45	252	252	-	-	975	-	-	-	-	39,615	2,624	-
4b.1.3.4	TURB-BLD-232-4_2	-	112	1	5	39	-	-	35	192	192	-	-	693	-	-	-	-	28,131	2,039	-
4b.1.3.5	TURB-BLD-232-5_2	-	150	1	9	67	-	-	49	276	276	-	-	1,175	-	-	-	-	47,717	2,772	-
4b.1.3.6	TURB-BLD-232-6_2	-	174	1	8	64	-	-	54	301	301	-	-	1,117	-	-	-	-	45,362	3,202	-
4b.1.3.7	TURB-BLD-232-7_2	-	117	1	6	43	-	-	36	202	202	-	-	751	-	-	-	-	30,484	2,154	-
4b.1.3.8	TURB-BLD-246-1_2	-	110	3	16	127	-	-	49	305	305	-	-	2,235	-	-	-	-	90,750	2,025	-
4b.1.3.9	TURB-BLD-248-1_2	-	110	2	11	88	-	-	42	253	253	-	-	1,542	-	-	-	-	62,614	2,048	-
4b.1.3.10	TURB-BLD-248-2_2	-	154	1	6	44	-	-	46	251	251	-	-	776	-	-	-	-	31,504	2,935	-
4b.1.3.11	TURB-BLD-248-3_2	-	287	8	49	379	-	-	137	860	860	-	-	6,672	-	-	-	-	270,947	5,319	-
4b.1.3.12	TURB-BLD-248-4_2	-	198	6	38	290	-	-	99	631	631	-	-	5,106	-	-	-	-	207,358	3,677	-
4b.1.3.13	TURB-BLD-248-5_2	-	51	1	5	42	-	-	20	120	120	-	-	744	-	-	-	-	30,197	936	-
4b.1.3.14	TURB-BLD-248-6_2	-	115	2	10	76	-	-	42	244	244	-	-	1,341	-	-	-	-	54,475	2,115	-
4b.1.3.15	TURB-BLD-248-7_2	-	71	2	12	89	-	-	33	206	206	-	-	1,567	-	-	-	-	63,655	1,306	-
4b.1.3.16	TURB-BLD-252-10_2	-	141	1	7	51	-	-	44	243	243	-	-	895	-	-	-	-	36,360	2,658	-
4b.1.3.17	TURB-BLD-252-13_2	-	123	1	5	36	-	-	37	201	201	-	-	626	-	-	-	-	25,426	2,252	-
4b.1.3.18	TURB-BLD-252-14_2	-	91	1	5	38	-	-	29	165	165	-	-	672	-	-	-	-	27,287	1,675	-
4b.1.3.19	TURB-BLD-252-1_2	-	89	3	18	137	-	-	46	293	293	-	-	2,414	-	-	-	-	98,015	1,605	-
4b.1.3.20	TURB-BLD-252-2_2	-	87	3	17	135	-	-	45	287	287	-	-	2,366	-	-	-	-	96,086	1,581	-
4b.1.3.21	TURB-BLD-252-3_2	-	21	0	1	11	-	-	7	41	41	-	-	196	-	-	-	-	7,972	379	-

Table C-1
Vermont Yankee Nuclear Power Station
Scenario 1: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2045
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Turbine Building System Components (continued)																					
4b.1.3.22	TURB-BLD-252-4_2	-	26	0	1	5	-	-	7	39	39	-	-	83	-	-	-	-	3,381	504	-
4b.1.3.23	TURB-BLD-252-5_2	-	178	1	8	58	-	-	54	299	299	-	-	1,021	-	-	-	-	41,454	3,373	-
4b.1.3.24	TURB-BLD-252-6_2	-	63	0	1	5	-	-	17	86	86	-	-	96	-	-	-	-	3,915	1,202	-
4b.1.3.25	TURB-BLD-252-7_2	-	73	2	14	104	-	-	36	229	229	-	-	1,831	-	-	-	-	74,360	1,194	-
4b.1.3.26	TURB-BLD-252-8_2	-	25	0	2	14	-	-	9	50	50	-	-	240	-	-	-	-	9,763	422	-
4b.1.3.27	TURB-BLD-252-9_2	-	104	2	15	119	-	-	46	288	288	-	-	2,095	-	-	-	-	85,062	1,739	-
4b.1.3.28	TURB-BLD-272-1_2	-	27	1	6	43	-	-	14	90	90	-	-	750	-	-	-	-	30,443	503	-
4b.1.3.29	TURB-BLD-272-3_2	-	324	3	18	139	-	-	105	588	588	-	-	2,442	-	-	-	-	99,166	5,817	-
4b.1.3.30	TURB-BLD-272-4_2	-	68	2	13	104	-	-	35	222	222	-	-	1,824	-	-	-	-	74,084	1,103	-
4b.1.3.31	TURB-BLD-272-5_2	-	51	1	9	68	-	-	24	154	154	-	-	1,199	-	-	-	-	48,693	776	-
4b.1.3.32	TURB-BLD-272-6_2	-	70	2	13	102	-	-	35	222	222	-	-	1,792	-	-	-	-	72,779	1,065	-
4b.1.3.33	TURB-BLD-272-9_0	-	12	-	-	-	-	-	2	13	-	-	13	-	-	-	-	-	-	212	-
4b.1.3	Totals	-	3,714	59	360	2,774	-	-	1,403	8,311	8,298	-	13	48,792	-	-	-	-	1,981,480	67,725	-
Control/Radwaste/Other Building System Components																					
4b.1.4.1	CONT-BLD-248-1_0	-	144	-	-	-	-	-	22	165	-	-	165	-	-	-	-	-	-	2,578	-
4b.1.4.2	CONT-BLD-248-1_2	-	1	0	0	1	-	-	0	2	2	-	-	9	-	-	-	-	372	10	-
4b.1.4.3	CONT-BLD-248-2_0	-	4	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	74	-
4b.1.4.4	CONT-BLD-262-1_0	-	110	-	-	-	-	-	16	126	-	-	126	-	-	-	-	-	-	1,974	-
4b.1.4.5	CONT-BLD-272-1_0	-	48	-	-	-	-	-	7	55	-	-	55	-	-	-	-	-	-	874	-
4b.1.4.6	CST-BASE-TRENCH_2	-	349	8	46	357	-	-	149	909	909	-	-	6,273	-	-	-	-	254,747	6,391	-
4b.1.4.7	CT_0	-	205	-	-	-	-	-	31	236	-	-	236	-	-	-	-	-	-	3,726	-
4b.1.4.8	DISCHARGE-STR_0	-	61	-	-	-	-	-	9	70	-	-	70	-	-	-	-	-	-	1,111	-
4b.1.4.9	DST-BASE_0	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	367	-
4b.1.4.10	INTAKE-STR_0	-	148	-	-	-	-	-	22	170	-	-	170	-	-	-	-	-	-	2,675	-
4b.1.4.11	NORTH-WAREHOUSE_2	-	26	0	1	9	-	-	8	45	45	-	-	165	-	-	-	-	6,694	477	-
4b.1.4.12	RW-BLD-230-1_3	-	93	12	18	-	133	-	60	317	317	-	-	-	721	-	-	-	50,021	1,745	-
4b.1.4.13	RW-BLD-230-2_3	-	122	18	26	-	191	-	84	441	441	-	-	-	1,051	-	-	-	71,955	2,282	-
4b.1.4.14	RW-BLD-230-3_3	-	53	5	7	-	51	-	28	143	143	-	-	-	238	-	-	-	19,202	974	-
4b.1.4.15	RW-BLD-230-4_3	-	37	4	6	-	46	-	22	116	116	-	-	-	249	-	-	-	17,241	697	-
4b.1.4.16	RW-BLD-230-5_3	-	29	3	4	-	32	-	16	84	84	-	-	-	171	-	-	-	12,002	545	-
4b.1.4.17	RW-BLD-230-7_3	-	141	12	18	-	134	-	73	378	378	-	-	-	594	-	-	-	50,458	2,509	-
4b.1.4.18	RW-BLD-246-8_2	-	40	2	3	5	18	-	16	83	83	-	-	92	79	-	-	-	10,493	712	-
4b.1.4.19	RW-BLD-252-10_2	-	13	0	0	3	-	-	4	21	21	-	-	52	-	-	-	-	2,100	257	-
4b.1.4.20	RW-BLD-252-11_2	-	12	0	1	7	-	-	4	24	24	-	-	120	-	-	-	-	4,869	222	-
4b.1.4.21	RW-BLD-252-12_2	-	90	1	9	67	-	-	34	201	201	-	-	1,179	-	-	-	-	47,870	1,614	-
4b.1.4.22	RW-BLD-252-13_2	-	73	2	7	47	8	-	29	166	166	-	-	819	44	-	-	-	36,442	1,321	-
4b.1.4.23	RW-BLD-252-1_2	-	63	0	2	16	-	-	19	100	100	-	-	283	-	-	-	-	11,513	1,203	-
4b.1.4.24	RW-BLD-252-2_2	-	35	1	4	20	11	-	15	87	87	-	-	344	49	-	-	-	18,159	665	-
4b.1.4.25	RW-BLD-252-3_2	-	15	0	1	5	-	-	5	25	25	-	-	86	-	-	-	-	3,500	282	-
4b.1.4.26	RW-BLD-252-4_2	-	25	0	1	9	-	-	8	43	43	-	-	150	-	-	-	-	6,078	481	-
4b.1.4.27	RW-BLD-252-5_2	-	37	0	3	20	-	-	13	72	72	-	-	351	-	-	-	-	14,258	666	-
4b.1.4.28	RW-BLD-252-6_3	-	69	8	10	-	75	-	38	200	200	-	-	-	331	-	-	-	28,118	1,267	-
4b.1.4.29	RW-BLD-252-7_3	-	23	2	3	-	23	-	12	64	64	-	-	-	123	-	-	-	8,810	434	-
4b.1.4.30	RW-BLD-252-8_2	-	41	1	3	11	12	-	15	84	84	-	-	198	53	-	-	-	12,560	739	-
4b.1.4.31	RW-BLD-252-9_3	-	44	3	5	-	37	-	21	110	110	-	-	-	182	-	-	-	13,871	802	-
4b.1.4.32	RW-BLD-264-1_2	-	4	0	0	0	-	-	1	5	5	-	-	2	-	-	-	-	86	78	-
4b.1.4.33	RW-BLD-264-2_2	-	5	0	0	1	-	-	1	7	7	-	-	11	-	-	-	-	454	100	-
4b.1.4.34	RW-BLD-264-RF_2	-	16	0	1	8	1	-	6	32	32	-	-	135	5	-	-	-	5,877	305	-
4b.1.4.35	RW-BLD-280-1_2	-	11	0	1	8	-	-	4	25	25	-	-	142	-	-	-	-	5,769	220	-
4b.1.4.36	RW-BLD-280-2_2	-	9	0	0	2	-	-	2	13	13	-	-	27	-	-	-	-	1,082	166	-
4b.1.4.37	SERV-BLD-248-1_2	-	68	1	3	25	-	-	21	118	118	-	-	440	-	-	-	-	17,867	1,263	-
4b.1.4.38	STACK_2	-	64	1	4	33	-	-	22	124	124	-	-	584	-	-	-	-	23,712	1,147	-
4b.1.4.39	YARD-252-CONT_2	-	557	27	160	1,235	-	-	351	2,330	2,330	-	-	21,717	-	-	-	-	881,922	10,121	-
4b.1.4.40	YARD-252-CONT_3	-	44	4	6	-	44	-	23	122	122	-	-	-	195	-	-	-	16,564	713	-
4b.1.4.41	YARD-252_0	-	297	-	-	-	-	-	45	342	-	-	342	-	-	-	-	-	-	5,517	-
4b.1.4	Totals	-	3,246	117	356	1,886	817	-	1,260	7,683	6,490	-	1,193	33,178	4,085	-	-	-	1,654,669	59,299	-
4b.1.5	Scaffolding in support of decommissioning	-	890	38	18	138	-	-	250	1,332	1,332	-	-	2,187	-	-	-	-	98,393	17,585	-

Table C-1
Vermont Yankee Nuclear Power Station
Scenario 1: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2045
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Decontamination of Site Buildings																					
4b.1.6.1	Reactor	2,225	1,213	131	436	2,865	243	-	1,985	9,098	9,098	-	-	50,400	4,240	-	-	-	2,314,493	56,618	-
4b.1.6.2	AOG	98	49	1	17	1	25	-	70	261	261	-	-	23	474	-	-	-	41,966	2,308	-
4b.1.6.3	Control	1	1	0	0	-	0	-	1	3	3	-	-	-	9	-	-	-	786	23	-
4b.1.6.4	Equipment Lock	7	1	0	2	-	2	-	5	17	17	-	-	-	43	-	-	-	3,708	127	-
4b.1.6.5	LLRW	1	-	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	11	-
4b.1.6.6	Misc Cont Yard Structures	96	97	2	29	-	44	-	88	355	355	-	-	-	825	-	-	-	71,454	3,044	-
4b.1.6.7	North Warehouse	35	4	0	5	-	7	-	21	71	71	-	-	-	131	-	-	-	11,310	600	-
4b.1.6.8	Radwaste	73	73	2	26	2	40	-	69	286	286	-	-	44	760	-	-	-	66,006	2,271	-
4b.1.6.9	Radwaste Compactor	3	5	0	2	-	3	-	4	16	16	-	-	-	52	-	-	-	4,494	124	-
4b.1.6.10	Service	1	9	0	3	-	5	-	4	22	22	-	-	-	88	-	-	-	7,662	148	-
4b.1.6.11	Turbine	551	236	9	112	95	154	-	405	1,563	1,563	-	-	1,673	2,908	-	-	-	316,622	12,330	-
4b.1.6.12	Vent Stack	3	30	1	11	-	16	-	15	75	75	-	-	-	305	-	-	-	26,448	510	-
4b.1.6.13	Reactor (post fuel)	159	369	29	491	44	729	-	437	2,258	2,258	-	-	768	13,783	-	-	-	1,223,993	8,113	-
4b.1.6	Totals	3,252	2,086	175	1,133	3,008	1,269	-	3,103	14,026	14,026	-	-	52,908	23,619	-	-	-	4,088,943	86,227	-
4b.1	Subtotal Period 4b Activity Costs	3,252	15,712	694	2,663	11,033	4,849	-	8,785	46,989	45,783	-	1,206	193,819	40,001	-	-	-	11,167,040	339,504	-
Period 4b Additional Costs																					
4b.2.1	Remedial Action Support Surveys	-	-	-	-	-	-	3,043	913	3,955	3,955	-	-	-	-	-	-	-	-	20,800	-
4b.2.2	Soil Remediation	-	166	52	5,557	-	7,786	-	2,826	16,386	16,386	-	-	-	142,773	-	-	-	12,849,600	3,402	-
4b.2.3	ISFSI License Termination	-	33	5	32	-	75	1,280	224	1,648	-	1,648	-	-	1,231	-	-	-	102,129	3,165	2,560
4b.2.4	Underground Services Excavations	-	1,365	-	-	-	-	-	205	1,569	1,569	-	-	-	-	-	-	-	-	15,911	-
4b.2.5	Asbestos Remediation	-	1,082	3	138	-	602	-	442	2,268	2,268	-	-	-	9,938	-	-	-	129,188	13,287	-
4b.2.6	Septic Field Removal	-	-	-	-	-	-	1,724	259	1,983	1,983	-	-	-	-	-	-	-	-	-	-
4b.2	Subtotal Period 4b Additional Costs	-	2,645	59	5,728	-	8,463	6,047	4,869	27,810	26,162	1,648	-	-	153,942	-	-	-	13,080,920	56,565	2,560
Period 4b Collateral Costs																					
4b.3.1	Process decommissioning water waste	12	-	11	83	-	82	-	40	229	229	-	-	-	205	-	-	-	12,306	40	-
4b.3.3	Small tool allowance	-	268	-	-	-	-	-	40	308	308	-	-	-	-	-	-	-	-	-	-
4b.3.4	Decommissioning Equipment Disposition	-	-	115	67	420	-	-	84	686	686	-	-	6,667	-	-	-	-	300,000	88	-
4b.3.5	On-site survey and release of 25.85 tons clean metallic waste	-	-	-	-	-	-	28	3	31	31	-	-	-	-	-	-	-	-	-	-
4b.3	Subtotal Period 4b Collateral Costs	12	268	126	150	420	82	28	168	1,254	1,254	-	-	6,667	205	-	-	-	312,306	128	-
Period 4b Period-Dependent Costs																					
4b.4.1	Decon supplies	1,365	-	-	-	-	-	-	341	1,706	1,706	-	-	-	-	-	-	-	-	-	-
4b.4.2	Insurance	-	-	-	-	-	-	1,028	103	1,131	1,131	-	-	-	-	-	-	-	-	-	-
4b.4.3	Property taxes	-	-	-	-	-	-	17	2	18	18	-	-	-	-	-	-	-	-	-	-
4b.4.4	Health physics supplies	-	2,101	-	-	-	-	-	525	2,626	2,626	-	-	-	-	-	-	-	-	-	-
4b.4.5	Heavy equipment rental	-	3,595	-	-	-	-	-	539	4,134	4,134	-	-	-	-	-	-	-	-	-	-
4b.4.6	Disposal of DAW generated	-	-	103	96	-	444	-	136	779	779	-	-	-	5,986	-	-	-	119,715	195	-
4b.4.7	Plant energy budget	-	-	-	-	-	-	2,164	325	2,489	2,489	-	-	-	-	-	-	-	-	-	-
4b.4.8	NRC Fees	-	-	-	-	-	-	1,231	123	1,354	1,354	-	-	-	-	-	-	-	-	-	-
4b.4.9	Site O&M	-	-	-	-	-	-	511	77	588	588	-	-	-	-	-	-	-	-	-	-
4b.4.10	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	954	143	1,097	1,097	-	-	-	-	-	-	-	-	-	-
4b.4.11	Corporate A&G	-	-	-	-	-	-	4,836	725	5,561	5,561	-	-	-	-	-	-	-	-	-	-
4b.4.12	Security Staff Cost	-	-	-	-	-	-	2,757	414	3,170	3,170	-	-	-	-	-	-	-	-	-	160,357
4b.4.13	DOC Staff Cost	-	-	-	-	-	-	29,269	4,390	33,659	33,659	-	-	-	-	-	-	-	-	-	343,806
4b.4.14	Utility Staff Cost	-	-	-	-	-	-	35,158	5,274	40,431	40,431	-	-	-	-	-	-	-	-	-	605,509
4b.4	Subtotal Period 4b Period-Dependent Costs	1,365	5,695	103	96	-	444	77,924	13,116	98,744	98,744	-	-	-	5,986	-	-	-	119,715	195	1,109,671
4b.0	TOTAL PERIOD 4b COST	4,629	24,320	982	8,637	11,453	13,838	83,999	26,938	174,797	171,943	1,648	1,206	200,486	200,134	-	-	-	24,679,980	396,392	1,112,231
PERIOD 4f - License Termination																					
Period 4f Direct Decommissioning Activities																					
4f.1.1	ORISE confirmatory survey	-	-	-	-	-	-	149	45	194	194	-	-	-	-	-	-	-	-	-	-
4f.1.2	Terminate license									a											
4f.1	Subtotal Period 4f Activity Costs	-	-	-	-	-	-	149	45	194	194	-	-	-	-	-	-	-	-	-	-

Table C-1
Vermont Yankee Nuclear Power Station
Scenario 1: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2045
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 4f Additional Costs																					
4f.2.1	License Termination Survey	-	-	-	-	-	-	5,451	1,635	7,087	7,087	-	-	-	-	-	-	-	-	64,820	-
4f.2.2	Confirmation and Verification Survey	-	-	-	-	-	-	1,651	495	2,146	2,146	-	-	-	-	-	-	-	-	9,784	-
4f.2	Subtotal Period 4f Additional Costs	-	-	-	-	-	-	7,102	2,131	9,232	9,232	-	-	-	-	-	-	-	-	74,604	-
Period 4f Collateral Costs																					
4f.3.1	DOC staff relocation expenses	-	-	-	-	-	-	1,030	154	1,184	1,184	-	-	-	-	-	-	-	-	-	-
4f.3	Subtotal Period 4f Collateral Costs	-	-	-	-	-	-	1,030	154	1,184	1,184	-	-	-	-	-	-	-	-	-	-
Period 4f Period-Dependent Costs																					
4f.4.1	Insurance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4f.4.2	Property taxes	-	-	-	-	-	-	5	1	6	6	-	-	-	-	-	-	-	-	-	-
4f.4.3	Health physics supplies	-	447	-	-	-	-	-	112	559	559	-	-	-	-	-	-	-	-	-	-
4f.4.4	Disposal of DAW generated	-	-	6	6	-	26	-	8	45	45	-	-	-	345	-	-	-	6,897	11	-
4f.4.5	Plant energy budget	-	-	-	-	-	-	174	26	200	200	-	-	-	-	-	-	-	-	-	-
4f.4.6	NRC Fees	-	-	-	-	-	-	371	37	408	408	-	-	-	-	-	-	-	-	-	-
4f.4.7	Site O&M	-	-	-	-	-	-	154	23	177	177	-	-	-	-	-	-	-	-	-	-
4f.4.8	Corporate A&G	-	-	-	-	-	-	921	138	1,059	1,059	-	-	-	-	-	-	-	-	-	-
4f.4.9	Security Staff Cost	-	-	-	-	-	-	318	48	366	366	-	-	-	-	-	-	-	-	-	18,514
4f.4.10	DOC Staff Cost	-	-	-	-	-	-	4,903	735	5,638	5,638	-	-	-	-	-	-	-	-	-	56,314
4f.4.11	Utility Staff Cost	-	-	-	-	-	-	4,789	718	5,507	5,507	-	-	-	-	-	-	-	-	-	73,286
4f.4	Subtotal Period 4f Period-Dependent Costs	-	447	6	6	-	26	11,634	1,846	13,964	13,964	-	-	-	345	-	-	-	6,897	11	148,114
4f.0	TOTAL PERIOD 4f COST	-	447	6	6	-	26	19,914	4,176	24,574	24,574	-	-	-	345	-	-	-	6,897	74,615	148,114
PERIOD 4 TOTALS		4,816	45,549	11,671	12,532	25,569	27,902	146,583	57,013	331,634	328,760	1,648	1,225	405,811	225,290	1,377	230	1,785	37,200,800	682,280	1,862,661
PERIOD 5b - Site Restoration																					
Period 5b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
5b.1.1.1	Reactor	-	4,030	-	-	-	-	-	605	4,635	-	-	4,635	-	-	-	-	-	-	47,743	-
5b.1.1.2	AOG	-	1,617	-	-	-	-	-	243	1,859	-	-	1,859	-	-	-	-	-	-	19,704	-
5b.1.1.3	Bottle Storage Shed	-	6	-	-	-	-	-	1	7	-	-	7	-	-	-	-	-	-	81	-
5b.1.1.4	Construction Office	-	58	-	-	-	-	-	9	67	-	-	67	-	-	-	-	-	-	961	-
5b.1.1.5	Control	-	174	-	-	-	-	-	26	200	-	-	200	-	-	-	-	-	-	2,292	-
5b.1.1.6	Control Access	-	35	-	-	-	-	-	5	40	-	-	40	-	-	-	-	-	-	549	-
5b.1.1.7	Cooling Towers	-	1,857	-	-	-	-	-	279	2,136	-	-	2,136	-	-	-	-	-	-	30,896	-
5b.1.1.8	Discharge & Aerating Structures	-	207	-	-	-	-	-	31	238	-	-	238	-	-	-	-	-	-	1,615	-
5b.1.1.9	Equipment Lock	-	76	-	-	-	-	-	11	87	-	-	87	-	-	-	-	-	-	1,039	-
5b.1.1.10	Gatehouse 1	-	10	-	-	-	-	-	2	12	-	-	12	-	-	-	-	-	-	148	-
5b.1.1.11	Gatehouse 2	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	287	-
5b.1.1.12	Intake Structure	-	372	-	-	-	-	-	56	427	-	-	427	-	-	-	-	-	-	4,004	-
5b.1.1.13	LLRW	-	77	-	-	-	-	-	12	89	-	-	89	-	-	-	-	-	-	1,126	-
5b.1.1.14	Misc Cont Yard Structures	-	143	-	-	-	-	-	21	164	-	-	164	-	-	-	-	-	-	1,992	-
5b.1.1.15	Misc Yard Structures	-	501	-	-	-	-	-	75	576	-	-	576	-	-	-	-	-	-	6,685	-
5b.1.1.16	New Warehouse	-	257	-	-	-	-	-	39	296	-	-	296	-	-	-	-	-	-	4,052	-
5b.1.1.17	North Warehouse	-	56	-	-	-	-	-	8	64	-	-	64	-	-	-	-	-	-	649	-
5b.1.1.18	Office Area (Turbine Bldg)	-	102	-	-	-	-	-	15	117	-	-	117	-	-	-	-	-	-	1,530	-
5b.1.1.19	Piping and Excavations	-	967	-	-	-	-	-	145	1,112	-	-	1,112	-	-	-	-	-	-	4,877	-
5b.1.1.20	Radwaste	-	238	-	-	-	-	-	36	273	-	-	273	-	-	-	-	-	-	2,964	-
5b.1.1.21	Radwaste Compactor	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	70	-
5b.1.1.22	Security Modifications	-	518	-	-	-	-	-	78	596	-	-	596	-	-	-	-	-	-	4,901	-
5b.1.1.23	Service	-	62	-	-	-	-	-	9	71	-	-	71	-	-	-	-	-	-	949	-
5b.1.1.24	Turbine	-	2,318	-	-	-	-	-	348	2,665	-	-	2,665	-	-	-	-	-	-	30,292	-
5b.1.1.25	Turbine Pedestal	-	480	-	-	-	-	-	72	552	-	-	552	-	-	-	-	-	-	5,277	-
5b.1.1.26	Turbine Storage Facility	-	112	-	-	-	-	-	17	128	-	-	128	-	-	-	-	-	-	1,986	-
5b.1.1.27	Vent Stack	-	8	-	-	-	-	-	1	10	-	-	10	-	-	-	-	-	-	126	-
5b.1.1.28	Reactor (post fuel)	-	31	-	-	-	-	-	5	35	-	-	35	-	-	-	-	-	-	535	-
5b.1.1	Totals	-	14,336	-	-	-	-	-	2,150	16,487	-	-	16,487	-	-	-	-	-	-	177,331	-

Table C-1
Vermont Yankee Nuclear Power Station
Scenario 1: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2045
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Site Closeout Activities																					
5b.1.2	Grade & landscape site	-	457	-	-	-	-	-	69	526	-	-	526	-	-	-	-	-	-	1,052	-
5b.1.3	Final report to NRC	-	-	-	-	-	-	183	27	210	210	-	-	-	-	-	-	-	-	-	1,560
5b.1	Subtotal Period 5b Activity Costs	-	14,794	-	-	-	-	183	2,246	17,223	210	-	17,013	-	-	-	-	-	-	178,383	1,560
Period 5b Additional Costs																					
5b.2.1	Concrete Processing	-	435	-	313	-	-	567	197	1,512	-	-	1,512	-	-	-	-	-	-	2,402	-
5b.2.2	ISFSI Demolitions and Site Restoration	-	1,298	-	-	-	-	78	206	1,582	-	1,582	-	-	-	-	-	-	-	17,348	160
5b.2.3	Intake & Discharge Cofferdams	-	621	-	-	-	-	-	93	714	-	-	714	-	-	-	-	-	-	6,400	-
5b.2.4	Backfill Underground Services Excavation	-	2,450	-	-	-	-	-	367	2,817	-	-	2,817	-	-	-	-	-	-	8,066	-
5b.2.5	Backfill Structures	-	1,931	-	-	-	-	-	290	2,220	-	-	2,220	-	-	-	-	-	-	6,358	-
5b.2	Subtotal Period 5b Additional Costs	-	6,734	-	313	-	-	645	1,154	8,846	-	1,582	7,263	-	-	-	-	-	-	40,574	160
Period 5b Collateral Costs																					
5b.3.1	Small tool allowance	-	168	-	-	-	-	-	25	194	-	-	194	-	-	-	-	-	-	-	-
5b.3.2	Site O&M	-	-	-	-	-	-	208	31	239	-	-	239	-	-	-	-	-	-	-	-
5b.3	Subtotal Period 5b Collateral Costs	-	168	-	-	-	-	208	56	433	-	-	433	-	-	-	-	-	-	-	-
Period 5b Period-Dependent Costs																					
5b.4.1	Insurance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5b.4.2	Property taxes	-	-	-	-	-	-	10	1	11	-	-	11	-	-	-	-	-	-	-	-
5b.4.3	Heavy equipment rental	-	3,144	-	-	-	-	-	472	3,615	-	-	3,615	-	-	-	-	-	-	-	-
5b.4.4	Plant energy budget	-	-	-	-	-	-	176	26	203	-	-	203	-	-	-	-	-	-	-	-
5b.4.5	Corporate A&G	-	-	-	-	-	-	464	70	533	-	-	533	-	-	-	-	-	-	-	-
5b.4.6	Security Staff Cost	-	-	-	-	-	-	646	97	743	-	-	743	-	-	-	-	-	-	-	37,577
5b.4.7	DOC Staff Cost	-	-	-	-	-	-	9,655	1,448	11,103	-	-	11,103	-	-	-	-	-	-	-	106,469
5b.4.8	Utility Staff Cost	-	-	-	-	-	-	4,083	612	4,695	-	-	4,695	-	-	-	-	-	-	-	61,063
5b.4	Subtotal Period 5b Period-Dependent Costs	-	3,144	-	-	-	-	15,033	2,726	20,903	-	-	20,903	-	-	-	-	-	-	-	205,109
5b.0	TOTAL PERIOD 5b COST	-	24,839	-	313	-	-	16,069	6,183	47,404	210	1,582	45,612	-	-	-	-	-	-	218,957	206,829
PERIOD 5 TOTALS		-	24,839	-	313	-	-	16,069	6,183	47,404	210	1,582	45,612	-	-	-	-	-	-	218,957	206,829
TOTAL COST TO DECOMMISSION		**12,076**	**79,824**	**12,465**	**15,741**	**27,261**	**33,237**	**692,350**	**147,737**	**1,020,692**	**645,773**	**327,127**	**47,792**	**409,099**	**257,338**	**1,377**	**230**	**1,785**	**38,895,860**	**992,179**	**7,952,696**

TOTAL COST TO DECOMMISSION WITH 16.92% CONTINGENCY:	**$1,020,692**	**thousands of 2011 dollars**
TOTAL NRC LICENSE TERMINATION COST IS 63.27% OR:	**$645,773**	**thousands of 2011 dollars**
SPENT FUEL MANAGEMENT COST IS 32.05% OR:	**$327,127**	**thousands of 2011 dollars**
NON-NUCLEAR DEMOLITION COST IS 4.68% OR:	**$47,792**	**thousands of 2011 dollars**
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC)	**258,944**	**cubic feet**
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED	**1,785**	**cubic feet**
TOTAL SCRAP METAL REMOVED:	**19,091**	**tons**
TOTAL CRAFT LABOR REQUIREMENTS:	**992,179**	**man-hours**

End Notes:
n/a - indicates that this activity not charged as decommissioning expense.
a - indicates that this activity performed by decommissioning staff.
0 - indicates that this value is less than 0.5 but is non-zero.
a cell containing " - " indicates a zero value

Table C-2
Vermont Yankee Nuclear Power Station
Scenario 2: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a.1.1	SAFSTOR site characterization survey	-	-	-	-	-	-	295	89	384	384	-	-	-	-	-	-	-	-	-	-
1a.1.2	Prepare preliminary decommissioning cost	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
1a.1.3	Notification of Cessation of Operations									a											
1a.1.4	Remove fuel & source material									n/a											
1a.1.5	Notification of Permanent Defueling									a											
1a.1.6	Deactivate plant systems & process waste									a											
1a.1.7	Prepare and submit PSDAR	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1a.1.8	Review plant dwgs & specs.	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
1a.1.9	Perform detailed rad survey									a											
1a.1.10	Estimate by-product inventory	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.11	End product description	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.12	Detailed by-product inventory	-	-	-	-	-	-	176	26	202	202	-	-	-	-	-	-	-	-	-	1,500
1a.1.13	Define major work sequence	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.14	Perform SER and EA	-	-	-	-	-	-	363	54	417	417	-	-	-	-	-	-	-	-	-	3,100
1a.1.15	Perform Site-Specific Cost Study	-	-	-	-	-	-	585	88	673	673	-	-	-	-	-	-	-	-	-	5,000
Activity Specifications																					
1a.1.16.1	Prepare plant and facilities for SAFSTOR	-	-	-	-	-	-	576	86	662	662	-	-	-	-	-	-	-	-	-	4,920
1a.1.16.2	Plant systems	-	-	-	-	-	-	488	73	561	561	-	-	-	-	-	-	-	-	-	4,167
1a.1.16.3	Plant structures and buildings	-	-	-	-	-	-	365	55	420	420	-	-	-	-	-	-	-	-	-	3,120
1a.1.16.4	Waste management	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1a.1.16.5	Facility and site dormancy	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1a.1.16	Total	-	-	-	-	-	-	1,897	285	2,182	2,182	-	-	-	-	-	-	-	-	-	16,207
Detailed Work Procedures																					
1a.1.17.1	Plant systems	-	-	-	-	-	-	138	21	159	159	-	-	-	-	-	-	-	-	-	1,183
1a.1.17.2	Facility closeout & dormancy	-	-	-	-	-	-	140	21	162	162	-	-	-	-	-	-	-	-	-	1,200
1a.1.17	Total	-	-	-	-	-	-	279	42	321	321	-	-	-	-	-	-	-	-	-	2,383
1a.1.18	Procure vacuum drying system	-	-	-	-	-	-	12	2	13	13	-	-	-	-	-	-	-	-	-	100
1a.1.19	Drain/de-energize non-cont. systems									a											
1a.1.20	Drain & dry NSSS									a											
1a.1.21	Drain/de-energize contaminated systems									a											
1a.1.22	Decon/secure contaminated systems									a											
1a.1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	4,496	719	5,215	5,215	-	-	-	-	-	-	-	-	-	35,890
Period 1a Collateral Costs																					
1a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	20,820	3,123	23,943	-	23,943	-	-	-	-	-	-	-	-	-
1a.3	Subtotal Period 1a Collateral Costs	-	-	-	-	-	-	20,820	3,123	23,943	-	23,943	-	-	-	-	-	-	-	-	-
Period 1a Period-Dependent Costs																					
1a.4.1	Insurance	-	-	-	-	-	-	857	86	943	943	-	-	-	-	-	-	-	-	-	-
1a.4.2	Property taxes	-	-	-	-	-	-	7	1	7	7	-	-	-	-	-	-	-	-	-	-
1a.4.3	Health physics supplies	-	347	-	-	-	-	-	87	433	433	-	-	-	-	-	-	-	-	-	-
1a.4.4	Heavy equipment rental	-	338	-	-	-	-	-	51	389	389	-	-	-	-	-	-	-	-	-	-
1a.4.5	Disposal of DAW generated	-	-	11	10	-	45	-	14	79	79	-	-	-	610	-	-	-	12,190	20	-
1a.4.6	Plant energy budget	-	-	-	-	-	-	1,173	176	1,349	1,349	-	-	-	-	-	-	-	-	-	-
1a.4.7	NRC Fees	-	-	-	-	-	-	809	81	890	890	-	-	-	-	-	-	-	-	-	-
1a.4.8	Emergency Planning Fees	-	-	-	-	-	-	4,660	466	5,126	-	5,126	-	-	-	-	-	-	-	-	-
1a.4.9	Site O&M	-	-	-	-	-	-	208	31	239	239	-	-	-	-	-	-	-	-	-	-
1a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	763	114	878	-	878	-	-	-	-	-	-	-	-	-
1a.4.11	ISFSI Operating Costs	-	-	-	-	-	-	89	13	103	-	103	-	-	-	-	-	-	-	-	-
1a.4.12	Corporate A&G	-	-	-	-	-	-	8,708	1,306	10,014	10,014	-	-	-	-	-	-	-	-	-	-
1a.4.13	Security Staff Cost	-	-	-	-	-	-	5,356	803	6,159	6,159	-	-	-	-	-	-	-	-	-	157,471
1a.4.14	Utility Staff Cost	-	-	-	-	-	-	24,094	3,614	27,708	27,708	-	-	-	-	-	-	-	-	-	423,400
1a.4	Subtotal Period 1a Period-Dependent Costs	-	685	11	10	-	45	46,723	6,843	54,316	48,210	6,106	-	-	610	-	-	-	12,190	20	580,871
1a.0	TOTAL PERIOD 1a COST	-	685	11	10	-	45	72,039	10,685	83,474	53,425	30,049	-	-	610	-	-	-	12,190	20	616,761

Table C-2
Vermont Yankee Nuclear Power Station
Scenario 2: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1b - SAFSTOR Limited DECON Activities																					
Period 1b Direct Decommissioning Activities																					
Decontamination of Site Buildings																					
1b.1.1.1	Reactor	2,212	-	-	-	-	-	-	1,106	3,318	3,318	-	-	-	-	-	-	-	-	35,257	-
1b.1.1.2	AOG	93	-	-	-	-	-	-	47	140	140	-	-	-	-	-	-	-	-	1,486	-
1b.1.1.3	Equipment Lock	7	-	-	-	-	-	-	3	10	10	-	-	-	-	-	-	-	-	108	-
1b.1.1.4	LLRW	1	-	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	11	-
1b.1.1.5	Misc Cont Yard Structures	85	-	-	-	-	-	-	43	128	128	-	-	-	-	-	-	-	-	1,359	-
1b.1.1.6	North Warehouse	34	-	-	-	-	-	-	17	51	51	-	-	-	-	-	-	-	-	544	-
1b.1.1.7	Radwaste	65	-	-	-	-	-	-	32	97	97	-	-	-	-	-	-	-	-	1,033	-
1b.1.1.8	Radwaste Compactor	2	-	-	-	-	-	-	1	3	3	-	-	-	-	-	-	-	-	36	-
1b.1.1.9	Turbine	531	-	-	-	-	-	-	265	796	796	-	-	-	-	-	-	-	-	8,452	-
1b.1.1.10	Reactor (post fuel)	158	-	-	-	-	-	-	79	236	236	-	-	-	-	-	-	-	-	2,511	-
1b.1.1	Totals	3,188	-	-	-	-	-	-	1,594	4,781	4,781	-	-	-	-	-	-	-	-	50,798	-
1b.1	Subtotal Period 1b Activity Costs	3,188	-	-	-	-	-	-	1,594	4,781	4,781	-	-	-	-	-	-	-	-	50,798	-
Period 1b Additional Costs																					
1b.2.1	Spent Fuel Pool Isolation	-	-	-	-	-	-	10,280	1,542	11,822	11,822	-	-	-	-	-	-	-	-	-	-
1b.2.2	Asbestos Remediation	-	1,644	30	177	-	602	67	601	3,121	3,121	-	-	-	9,938	-	-	-	129,188	13,287	-
1b.2.3	Operational Waste	406	-	139	1,052	-	1,045	-	636	3,277	3,277	-	-	-	2,600	-	-	-	156,000	507	-
1b.2.4	Hazardous Waste	-	-	197	95	1,692	-	-	288	2,271	2,271	-	-	3,288	-	-	-	-	354,266	1,619	-
1b.2	Subtotal Period 1b Additional Costs	406	1,644	366	1,323	1,692	1,647	10,347	3,067	20,491	20,491	-	-	3,288	12,538	-	-	-	639,454	15,413	-
Period 1b Collateral Costs																					
1b.3.1	Decon equipment	667	-	-	-	-	-	-	100	767	767	-	-	-	-	-	-	-	-	-	-
1b.3.2	Process decommissioning water waste	267	-	90	681	-	677	-	414	2,128	2,128	-	-	-	1,684	-	-	-	101,021	328	-
1b.3.4	Small tool allowance	-	60	-	-	-	-	-	9	69	69	-	-	-	-	-	-	-	-	-	-
1b.3.5	Spent Fuel Capital and Transfer	-	-	-	-	-	-	8,128	1,219	9,347	-	9,347	-	-	-	-	-	-	-	-	-
1b.3	Subtotal Period 1b Collateral Costs	933	60	90	681	-	677	8,128	1,742	12,312	2,964	9,347	-	-	1,684	-	-	-	101,021	328	-
Period 1b Period-Dependent Costs																					
1b.4.1	Decon supplies	1,275	-	-	-	-	-	-	319	1,593	1,593	-	-	-	-	-	-	-	-	-	-
1b.4.2	Insurance	-	-	-	-	-	-	105	11	116	116	-	-	-	-	-	-	-	-	-	-
1b.4.3	Property taxes	-	-	-	-	-	-	2	0	2	2	-	-	-	-	-	-	-	-	-	-
1b.4.4	Health physics supplies	-	301	-	-	-	-	-	75	376	376	-	-	-	-	-	-	-	-	-	-
1b.4.5	Heavy equipment rental	-	85	-	-	-	-	-	13	98	98	-	-	-	-	-	-	-	-	-	-
1b.4.6	Disposal of DAW generated	-	-	8	7	-	35	-	11	61	61	-	-	-	466	-	-	-	9,315	15	-
1b.4.7	Plant energy budget	-	-	-	-	-	-	296	44	340	340	-	-	-	-	-	-	-	-	-	-
1b.4.8	NRC Fees	-	-	-	-	-	-	146	15	161	161	-	-	-	-	-	-	-	-	-	-
1b.4.9	Emergency Planning Fees	-	-	-	-	-	-	1,032	103	1,136	-	1,136	-	-	-	-	-	-	-	-	-
1b.4.10	Site O&M	-	-	-	-	-	-	52	8	60	60	-	-	-	-	-	-	-	-	-	-
1b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	192	29	221	-	221	-	-	-	-	-	-	-	-	-
1b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	23	3	26	-	26	-	-	-	-	-	-	-	-	-
1b.4.13	Corporate A&G	-	-	-	-	-	-	1,090	164	1,254	1,254	-	-	-	-	-	-	-	-	-	-
1b.4.14	Security Staff Cost	-	-	-	-	-	-	1,350	202	1,552	1,552	-	-	-	-	-	-	-	-	-	39,691
1b.4.15	Utility Staff Cost	-	-	-	-	-	-	6,073	911	6,984	6,984	-	-	-	-	-	-	-	-	-	106,720
1b.4	Subtotal Period 1b Period-Dependent Costs	1,275	386	8	7	-	35	10,362	1,907	13,980	12,598	1,383	-	-	466	-	-	-	9,315	15	146,411
1b.0	TOTAL PERIOD 1b COST	5,801	2,091	464	2,012	1,692	2,359	28,836	8,310	51,565	40,835	10,730	-	3,288	14,687	-	-	-	749,790	66,554	146,411
PERIOD 1c - Preparations for SAFSTOR Dormancy																					
Period 1c Direct Decommissioning Activities																					
1c.1.1	Prepare support equipment for storage	-	455	-	-	-	-	-	68	523	523	-	-	-	-	-	-	-	-	3,000	-
1c.1.2	Install containment pressure equal. lines	-	43	-	-	-	-	-	6	50	50	-	-	-	-	-	-	-	-	700	-
1c.1.3	Interim survey prior to dormancy	-	-	-	-	-	-	733	220	953	953	-	-	-	-	-	-	-	-	18,863	-
1c.1.4	Secure building accesses									a											
1c.1.5	Prepare & submit interim report	-	-	-	-	-	-	68	10	79	79	-	-	-	-	-	-	-	-	-	583

Table C-2
Vermont Yankee Nuclear Power Station
Scenario 2: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
1c.1	Subtotal Period 1c Activity Costs	-	498	-	-	-	-	801	305	1,604	1,604	-	-	-	-	-	-	-	-	22,563	583
Period 1c Collateral Costs																					
1c.3.1	Process decommissioning water waste	196	-	66	501	-	498	-	304	1,565	1,565	-	-	-	1,238	-	-	-	74,305	241	-
1c.3.3	Small tool allowance	-	3	-	-	-	-	-	0	4	4	-	-	-	-	-	-	-	-	-	-
1c.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	8,216	1,232	9,449	-	9,449	-	-	-	-	-	-	-	-	-
1c.3	Subtotal Period 1c Collateral Costs	196	3	66	501	-	498	8,216	1,537	11,017	1,568	9,449	-	-	1,238	-	-	-	74,305	241	-
Period 1c Period-Dependent Costs																					
1c.4.1	Insurance	-	-	-	-	-	-	106	11	117	117	-	-	-	-	-	-	-	-	-	-
1c.4.2	Property taxes	-	-	-	-	-	-	2	0	2	2	-	-	-	-	-	-	-	-	-	-
1c.4.3	Health physics supplies	-	162	-	-	-	-	-	40	202	202	-	-	-	-	-	-	-	-	-	-
1c.4.4	Heavy equipment rental	-	86	-	-	-	-	-	13	99	99	-	-	-	-	-	-	-	-	-	-
1c.4.5	Disposal of DAW generated	-	-	3	2	-	12	-	4	20	20	-	-	-	155	-	-	-	3,106	5	-
1c.4.6	Plant energy budget	-	-	-	-	-	-	299	45	344	344	-	-	-	-	-	-	-	-	-	-
1c.4.7	NRC Fees	-	-	-	-	-	-	148	15	163	163	-	-	-	-	-	-	-	-	-	-
1c.4.8	Emergency Planning Fees	-	-	-	-	-	-	1,044	104	1,148	-	1,148	-	-	-	-	-	-	-	-	-
1c.4.9	Site O&M	-	-	-	-	-	-	53	8	61	61	-	-	-	-	-	-	-	-	-	-
1c.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	194	29	224	-	224	-	-	-	-	-	-	-	-	-
1c.4.11	ISFSI Operating Costs	-	-	-	-	-	-	23	3	26	-	26	-	-	-	-	-	-	-	-	-
1c.4.12	Corporate A&G	-	-	-	-	-	-	1,102	165	1,267	1,267	-	-	-	-	-	-	-	-	-	-
1c.4.13	Security Staff Cost	-	-	-	-	-	-	1,365	205	1,569	1,569	-	-	-	-	-	-	-	-	-	40,123
1c.4.14	Utility Staff Cost	-	-	-	-	-	-	6,139	921	7,060	7,060	-	-	-	-	-	-	-	-	-	107,880
1c.4	Subtotal Period 1c Period-Dependent Costs	-	248	3	2	-	12	10,474	1,563	12,302	10,904	1,398	-	-	155	-	-	-	3,106	5	148,003
1c.0	TOTAL PERIOD 1c COST	196	749	69	504	-	509	19,492	3,405	24,923	14,076	10,847	-	-	1,394	-	-	-	77,411	22,810	148,586
PERIOD 1 TOTALS		5,997	3,525	543	2,525	1,692	2,913	120,367	22,399	159,962	108,336	51,626	-	3,288	16,691	-	-	-	839,391	89,384	911,759
PERIOD 2a - SAFSTOR Dormancy with Wet Spent Fuel Storage																					
Period 2a Direct Decommissioning Activities																					
2a.1.1	Quarterly Inspection									a											
2a.1.2	Semi-annual environmental survey									a											
2a.1.3	Prepare reports									a											
2a.1.4	Bituminous roof replacement	-	-	-	-	-	-	231	35	265	265	-	-	-	-	-	-	-	-	-	-
2a.1.5	Maintenance supplies	-	-	-	-	-	-	539	135	673	673	-	-	-	-	-	-	-	-	-	-
2a.1	Subtotal Period 2a Activity Costs	-	-	-	-	-	-	769	169	938	938	-	-	-	-	-	-	-	-	-	-
Period 2a Collateral Costs																					
2a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	54,542	8,181	62,724	-	62,724	-	-	-	-	-	-	-	-	-
2a.3	Subtotal Period 2a Collateral Costs	-	-	-	-	-	-	54,542	8,181	62,724	-	62,724	-	-	-	-	-	-	-	-	-
Period 2a Period-Dependent Costs																					
2a.4.1	Insurance	-	-	-	-	-	-	1,668	167	1,835	-	1,835	-	-	-	-	-	-	-	-	-
2a.4.2	Property taxes	-	-	-	-	-	-	27	3	30	-	30	-	-	-	-	-	-	-	-	-
2a.4.3	Health physics supplies	-	555	-	-	-	-	-	139	694	694	-	-	-	-	-	-	-	-	-	-
2a.4.4	Disposal of DAW generated	-	-	16	15	-	68	-	21	120	120	-	-	-	918	-	-	-	18,368	30	-
2a.4.5	Plant energy budget	-	-	-	-	-	-	936	140	1,077	-	1,077	-	-	-	-	-	-	-	-	-
2a.4.6	NRC Fees	-	-	-	-	-	-	833	83	916	916	-	-	-	-	-	-	-	-	-	-
2a.4.7	Emergency Planning Fees	-	-	-	-	-	-	16,349	1,635	17,984	-	17,984	-	-	-	-	-	-	-	-	-
2a.4.8	Site O&M	-	-	-	-	-	-	830	124	954	-	954	-	-	-	-	-	-	-	-	-
2a.4.9	Spent Fuel Pool O&M	-	-	-	-	-	-	3,046	457	3,503	-	3,503	-	-	-	-	-	-	-	-	-
2a.4.10	ISFSI Operating Costs	-	-	-	-	-	-	357	54	411	-	411	-	-	-	-	-	-	-	-	-
2a.4.11	Corporate A&G	-	-	-	-	-	-	6,204	931	7,135	-	7,135	-	-	-	-	-	-	-	-	-
2a.4.12	Security Staff Cost	-	-	-	-	-	-	15,315	2,297	17,612	-	17,612	-	-	-	-	-	-	-	-	443,344
2a.4.13	Utility Staff Cost	-	-	-	-	-	-	19,610	2,941	22,551	-	22,551	-	-	-	-	-	-	-	-	328,866
2a.4	Subtotal Period 2a Period-Dependent Costs	-	555	16	15	-	68	65,175	8,992	74,821	1,730	73,091	-	-	918	-	-	-	18,368	30	772,210
2a.0	TOTAL PERIOD 2a COST	-	555	16	15	-	68	120,487	17,343	138,483	2,668	135,815	-	-	918	-	-	-	18,368	30	772,210
PERIOD 2b - SAFSTOR Dormancy with Dry Spent Fuel Storage																					

Table C-2
Vermont Yankee Nuclear Power Station
Scenario 2: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2b Direct Decommissioning Activities																					
2b.1.1	Quarterly Inspection									a											
2b.1.2	Semi-annual environmental survey									a											
2b.1.3	Prepare reports									a											
2b.1.4	Bituminous roof replacement	-	-	-	-	-	-	2,805	421	3,226	3,226	-	-	-	-	-	-	-	-	-	-
2b.1.5	Maintenance supplies	-	-	-	-	-	-	6,551	1,638	8,189	8,189	-	-	-	-	-	-	-	-	-	-
2b.1	Subtotal Period 2b Activity Costs	-	-	-	-	-	-	9,356	2,059	11,415	11,415	-	-	-	-	-	-	-	-	-	-
Period 2b Additional Costs																					
2b.2.1	Remove spent fuel racks	576	67	132	260	-	1,908	-	834	3,776	3,776	-	-	-	8,439	-	-	-	717,311	1,332	-
2b.2	Subtotal Period 2b Additional Costs	576	67	132	260	-	1,908	-	834	3,776	3,776	-	-	-	8,439	-	-	-	717,311	1,332	-
Period 2b Collateral Costs																					
2b.3.1	Small tool allowance	-	8	-	-	-	-	-	1	9	9	-	-	-	-	-	-	-	-	-	-
2b.3.2	Spent Fuel Capital and Transfer	-	-	-	-	-	-	7,946	1,192	9,137	-	9,137	-	-	-	-	-	-	-	-	-
2b.3	Subtotal Period 2b Collateral Costs	-	8	-	-	-	-	7,946	1,193	9,147	9	9,137	-	-	-	-	-	-	-	-	-
Period 2b Period-Dependent Costs																					
2b.4.1	Insurance	-	-	-	-	-	-	18,944	1,894	20,839	(0)	20,839	-	-	-	-	-	-	-	-	-
2b.4.2	Property taxes	-	-	-	-	-	-	330	33	363	-	363	-	-	-	-	-	-	-	-	-
2b.4.3	Health physics supplies	-	3,280	-	-	-	-	-	820	4,100	4,100	-	-	-	-	-	-	-	-	-	-
2b.4.4	Disposal of DAW generated	-	-	92	86	-	398	-	122	699	699	-	-	-	5,367	-	-	-	107,337	175	-
2b.4.5	Plant energy budget	-	-	-	-	-	-	5,696	854	6,550	-	6,550	-	-	-	-	-	-	-	-	-
2b.4.6	NRC Fees	-	-	-	-	-	-	9,532	953	10,485	10,485	-	-	-	-	-	-	-	-	-	-
2b.4.7	Emergency Planning Fees	-	-	-	-	-	-	17,566	1,757	19,323	-	19,323	-	-	-	-	-	-	-	-	-
2b.4.8	Site O&M	-	-	-	-	-	-	10,093	1,514	11,607	(0)	11,607	-	-	-	-	-	-	-	-	-
2b.4.9	ISFSI Operating Costs	-	-	-	-	-	-	4,344	652	4,995	-	4,995	-	-	-	-	-	-	-	-	-
2b.4.10	Corporate A&G	-	-	-	-	-	-	12,906	1,936	14,842	0	14,842	-	-	-	-	-	-	-	-	-
2b.4.11	Security Staff Cost	-	-	-	-	-	-	99,277	14,892	114,168	(0)	114,169	-	-	-	-	-	-	-	-	2,734,560
2b.4.12	Utility Staff Cost	-	-	-	-	-	-	94,309	14,146	108,456	58,640	49,816	-	-	-	-	-	-	-	-	1,620,480
2b.4	Subtotal Period 2b Period-Dependent Costs	-	3,280	92	86	-	398	272,998	39,573	316,427	73,923	242,504	-	-	5,367	-	-	-	107,337	175	4,355,040
2b.0	TOTAL PERIOD 2b COST	576	3,355	224	346	-	2,306	290,299	43,658	340,765	89,124	251,641	-	-	13,806	-	-	-	824,648	1,507	4,355,040
PERIOD 2 TOTALS		576	3,910	240	361	-	2,374	410,786	61,001	479,248	91,792	387,456	-	-	14,724	-	-	-	843,016	1,537	5,127,250
PERIOD 3a - Reactivate Site Following SAFSTOR Dormancy																					
Period 3a Direct Decommissioning Activities																					
3a.1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
3a.1.2	Review plant dwgs & specs.	-	-	-	-	-	-	538	81	619	619	-	-	-	-	-	-	-	-	-	4,600
3a.1.3	Perform detailed rad survey									a											
3a.1.4	End product description	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
3a.1.5	Detailed by-product inventory	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
3a.1.6	Define major work sequence	-	-	-	-	-	-	878	132	1,010	1,010	-	-	-	-	-	-	-	-	-	7,500
3a.1.7	Perform SER and EA	-	-	-	-	-	-	363	54	417	417	-	-	-	-	-	-	-	-	-	3,100
3a.1.8	Perform Site-Specific Cost Study	-	-	-	-	-	-	585	88	673	673	-	-	-	-	-	-	-	-	-	5,000
3a.1.9	Prepare/submit License Termination Plan	-	-	-	-	-	-	479	72	551	551	-	-	-	-	-	-	-	-	-	4,096
3a.1.10	Receive NRC approval of termination plan									a											
Activity Specifications																					
3a.1.11.1	Re-activate plant & temporary facilities	-	-	-	-	-	-	863	129	992	893	-	99	-	-	-	-	-	-	-	7,370
3a.1.11.2	Plant systems	-	-	-	-	-	-	488	73	561	505	-	56	-	-	-	-	-	-	-	4,167
3a.1.11.3	Reactor internals	-	-	-	-	-	-	831	125	956	956	-	-	-	-	-	-	-	-	-	7,100
3a.1.11.4	Reactor vessel	-	-	-	-	-	-	761	114	875	875	-	-	-	-	-	-	-	-	-	6,500
3a.1.11.5	Sacrificial shield	-	-	-	-	-	-	59	9	67	67	-	-	-	-	-	-	-	-	-	500
3a.1.11.6	Moisture separators/reheaters	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
3a.1.11.7	Reinforced concrete	-	-	-	-	-	-	187	28	215	108	-	108	-	-	-	-	-	-	-	1,600
3a.1.11.8	Main Turbine	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
3a.1.11.9	Main Condensers	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
3a.1.11.10	Pressure suppression structure	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000

Table C-2
Vermont Yankee Nuclear Power Station
Scenario 2: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Activity Specifications (continued)																					
3a.1.11.11	Drywell	-	-	-	-	-	-	187	28	215	215	-	-	-	-	-	-	-	-	-	1,600
3a.1.11.12	Plant structures & buildings	-	-	-	-	-	-	365	55	420	210	-	210	-	-	-	-	-	-	-	3,120
3a.1.11.13	Waste management	-	-	-	-	-	-	538	81	619	619	-	-	-	-	-	-	-	-	-	4,600
3a.1.11.14	Facility & site closeout	-	-	-	-	-	-	105	16	121	61	-	61	-	-	-	-	-	-	-	900
3a.1.11	Total	-	-	-	-	-	-	5,224	784	6,008	5,474	-	534	-	-	-	-	-	-	-	44,633
Planning & Site Preparations																					
3a.1.12	Prepare dismantling sequence	-	-	-	-	-	-	281	42	323	323	-	-	-	-	-	-	-	-	-	2,400
3a.1.13	Plant prep. & temp. svces	-	-	-	-	-	-	2,800	420	3,220	3,220	-	-	-	-	-	-	-	-	-	-
3a.1.14	Design water clean-up system	-	-	-	-	-	-	164	25	188	188	-	-	-	-	-	-	-	-	-	1,400
3a.1.15	Rigging/Cont. Cntrl Envlps/tooling/etc.	-	-	-	-	-	-	2,200	330	2,530	2,530	-	-	-	-	-	-	-	-	-	-
3a.1.16	Procure casks/liners & containers	-	-	-	-	-	-	144	22	166	166	-	-	-	-	-	-	-	-	-	1,230
3a.1	Subtotal Period 3a Activity Costs	-	-	-	-	-	-	14,078	2,112	16,190	15,656	-	534	-	-	-	-	-	-	-	77,559
Period 3a Collateral Costs																					
3a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	200	30	230	-	230	-	-	-	-	-	-	-	-	-
3a.3	Subtotal Period 3a Collateral Costs	-	-	-	-	-	-	200	30	230	-	230	-	-	-	-	-	-	-	-	-
Period 3a Period-Dependent Costs																					
3a.4.1	Insurance	-	-	-	-	-	-	382	38	420	420	-	-	-	-	-	-	-	-	-	-
3a.4.2	Property taxes	-	-	-	-	-	-	7	1	7	7	-	-	-	-	-	-	-	-	-	-
3a.4.3	Health physics supplies	-	303	-	-	-	-	-	76	379	379	-	-	-	-	-	-	-	-	-	-
3a.4.4	Heavy equipment rental	-	338	-	-	-	-	-	51	389	389	-	-	-	-	-	-	-	-	-	-
3a.4.5	Disposal of DAW generated	-	-	9	8	-	38	-	12	67	67	-	-	-	514	-	-	-	10,287	17	-
3a.4.6	Plant energy budget	-	-	-	-	-	-	1,173	176	1,349	1,349	-	-	-	-	-	-	-	-	-	-
3a.4.7	NRC Fees	-	-	-	-	-	-	262	26	289	289	-	-	-	-	-	-	-	-	-	-
3a.4.8	Emergency Planning Fees	-	-	-	-	-	-	362	36	398	-	398	-	-	-	-	-	-	-	-	-
3a.4.9	Site O&M	-	-	-	-	-	-	208	31	239	239	-	-	-	-	-	-	-	-	-	-
3a.4.10	ISFSI Operating Costs	-	-	-	-	-	-	89	13	103	-	103	-	-	-	-	-	-	-	-	-
3a.4.11	Corporate A&G	-	-	-	-	-	-	1,887	283	2,170	2,170	-	-	-	-	-	-	-	-	-	-
3a.4.12	Security Staff Cost	-	-	-	-	-	-	2,335	350	2,685	2,685	-	-	-	-	-	-	-	-	-	65,179
3a.4.13	Utility Staff Cost	-	-	-	-	-	-	14,940	2,241	17,181	17,181	-	-	-	-	-	-	-	-	-	258,629
3a.4	Subtotal Period 3a Period-Dependent Costs	-	641	9	8	-	38	21,644	3,334	25,675	25,175	501	-	-	514	-	-	-	10,287	17	323,807
3a.0	TOTAL PERIOD 3a COST	-	641	9	8	-	38	35,923	5,476	42,095	40,831	731	534	-	514	-	-	-	10,287	17	401,366
PERIOD 3b - Decommissioning Preparations																					
Period 3b Direct Decommissioning Activities																					
Detailed Work Procedures																					
3b.1.1.1	Plant systems	-	-	-	-	-	-	554	83	637	573	-	64	-	-	-	-	-	-	-	4,733
3b.1.1.2	Reactor internals	-	-	-	-	-	-	468	70	538	538	-	-	-	-	-	-	-	-	-	4,000
3b.1.1.3	Remaining buildings	-	-	-	-	-	-	158	24	182	45	-	136	-	-	-	-	-	-	-	1,350
3b.1.1.4	CRD housings & NIs	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
3b.1.1.5	Incore instrumentation	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
3b.1.1.6	Removal primary containment	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
3b.1.1.7	Reactor vessel	-	-	-	-	-	-	425	64	489	489	-	-	-	-	-	-	-	-	-	3,630
3b.1.1.8	Facility closeout	-	-	-	-	-	-	140	21	162	81	-	81	-	-	-	-	-	-	-	1,200
3b.1.1.9	Sacrificial shield	-	-	-	-	-	-	140	21	162	162	-	-	-	-	-	-	-	-	-	1,200
3b.1.1.10	Reinforced concrete	-	-	-	-	-	-	117	18	135	67	-	67	-	-	-	-	-	-	-	1,000
3b.1.1.11	Main Turbine	-	-	-	-	-	-	243	37	280	280	-	-	-	-	-	-	-	-	-	2,080
3b.1.1.12	Main Condensers	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
3b.1.1.13	Moisture separators & reheaters	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
3b.1.1.14	Radwaste building	-	-	-	-	-	-	320	48	367	331	-	37	-	-	-	-	-	-	-	2,730
3b.1.1.15	Reactor building	-	-	-	-	-	-	320	48	367	331	-	37	-	-	-	-	-	-	-	2,730
3b.1.1	Total	-	-	-	-	-	-	3,832	575	4,407	3,986	-	422	-	-	-	-	-	-	-	32,741
3b.1	Subtotal Period 3b Activity Costs	-	-	-	-	-	-	3,832	575	4,407	3,986	-	422	-	-	-	-	-	-	-	32,741
Period 3b Additional Costs																					
3b.2.1	Site Characterization	-	-	-	-	-	-	3,706	1,112	4,818	4,818	-	-	-	-	-	-	-	-	-	-

Table C-2
Vermont Yankee Nuclear Power Station
Scenario 2: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
3b.2	Subtotal Period 3b Additional Costs	-	-	-	-	-	-	3,706	1,112	4,818	4,818	-	-	-	-	-	-	-	-	-	-
Period 3b Collateral Costs																					
3b.3.1	Decon equipment	667	-	-	-	-	-	-	100	767	767	-	-	-	-	-	-	-	-	-	-
3b.3.2	DOC staff relocation expenses	-	-	-	-	-	-	1,030	154	1,184	1,184	-	-	-	-	-	-	-	-	-	-
3b.3.3	Pipe cutting equipment	-	1,100	-	-	-	-	-	165	1,265	1,265	-	-	-	-	-	-	-	-	-	-
3b.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	101	15	117	-	117	-	-	-	-	-	-	-	-	-
3b.3	Subtotal Period 3b Collateral Costs	667	1,100	-	-	-	-	1,131	435	3,332	3,216	117	-	-	-	-	-	-	-	-	-
Period 3b Period-Dependent Costs																					
3b.4.1	Decon supplies	21	-	-	-	-	-	-	5	26	26	-	-	-	-	-	-	-	-	-	-
3b.4.2	Insurance	-	-	-	-	-	-	212	21	233	233	-	-	-	-	-	-	-	-	-	-
3b.4.3	Property taxes	-	-	-	-	-	-	3	0	4	4	-	-	-	-	-	-	-	-	-	-
3b.4.4	Health physics supplies	-	169	-	-	-	-	-	42	212	212	-	-	-	-	-	-	-	-	-	-
3b.4.5	Heavy equipment rental	-	172	-	-	-	-	-	26	197	197	-	-	-	-	-	-	-	-	-	-
3b.4.6	Disposal of DAW generated	-	-	5	5	-	22	-	7	38	38	-	-	-	295	-	-	-	5,898	10	-
3b.4.7	Plant energy budget	-	-	-	-	-	-	595	89	684	684	-	-	-	-	-	-	-	-	-	-
3b.4.8	NRC Fees	-	-	-	-	-	-	133	13	146	146	-	-	-	-	-	-	-	-	-	-
3b.4.9	Emergency Planning Fees	-	-	-	-	-	-	183	18	202	-	202	-	-	-	-	-	-	-	-	-
3b.4.10	Site O&M	-	-	-	-	-	-	105	16	121	121	-	-	-	-	-	-	-	-	-	-
3b.4.11	ISFSI Operating Costs	-	-	-	-	-	-	45	7	52	-	52	-	-	-	-	-	-	-	-	-
3b.4.12	Corporate A&G	-	-	-	-	-	-	1,045	157	1,202	1,202	-	-	-	-	-	-	-	-	-	-
3b.4.13	Security Staff Cost	-	-	-	-	-	-	1,183	177	1,361	1,361	-	-	-	-	-	-	-	-	-	33,036
3b.4.14	DOC Staff Cost	-	-	-	-	-	-	5,092	764	5,856	5,856	-	-	-	-	-	-	-	-	-	59,200
3b.4.15	Utility Staff Cost	-	-	-	-	-	-	7,572	1,136	8,708	8,708	-	-	-	-	-	-	-	-	-	131,086
3b.4	Subtotal Period 3b Period-Dependent Costs	21	341	5	5	-	22	16,170	2,479	19,042	18,788	254	-	-	295	-	-	-	5,898	10	223,321
3b.0	TOTAL PERIOD 3b COST	687	1,441	5	5	-	22	24,839	4,600	31,600	30,808	370	422	-	295	-	-	-	5,898	10	256,062
PERIOD 3 TOTALS		687	2,082	14	13	-	60	60,762	10,076	73,695	71,639	1,101	955	-	809	-	-	-	16,185	26	657,428
PERIOD 4a - Large Component Removal																					
Period 4a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
4a.1.1.1	Recirculation System Piping & Valves	22	71	20	28	89	185	-	94	509	509	-	-	575	608	-	-	-	133,340	1,761	-
4a.1.1.2	Recirculation Pumps & Motors	8	37	13	38	85	134	-	67	382	382	-	-	1,075	894	-	-	-	111,100	946	-
4a.1.1.3	CRDMs & NIs Removal	19	80	234	85	-	178	-	110	706	706	-	-	-	2,561	-	-	-	67,063	1,879	-
4a.1.1.4	Reactor Vessel Internals	81	2,632	8,448	1,287	-	4,707	253	6,840	24,247	24,247	-	-	-	1,002	1,377	230	-	258,030	28,033	1,253
4a.1.1.5	Reactor Vessel	-	6,294	1,513	674	-	2,889	253	6,749	18,372	18,372	-	-	-	12,772	-	-	-	1,292,271	28,033	1,253
4a.1.1	Totals	130	9,114	10,227	2,112	174	8,093	505	13,860	44,216	44,216	-	-	1,650	17,836	1,377	230	-	1,861,803	60,652	2,507
Removal of Major Equipment																					
4a.1.2	Main Turbine/Generator	-	217	1,149	546	4,201	-	-	881	6,993	6,993	-	-	66,677	-	-	-	-	3,000,454	3,897	-
4a.1.3	Main Condensers	-	475	645	306	2,358	-	-	583	4,366	4,366	-	-	37,422	-	-	-	-	1,684,000	8,400	-
Cascading Costs from Clean Building Demolition																					
4a.1.4.1	Reactor	-	701	-	-	-	-	-	105	806	806	-	-	-	-	-	-	-	-	8,238	-
4a.1.4.2	AOG	-	85	-	-	-	-	-	13	98	98	-	-	-	-	-	-	-	-	1,032	-
4a.1.4.3	Equipment Lock	-	4	-	-	-	-	-	1	5	5	-	-	-	-	-	-	-	-	55	-
4a.1.4.4	Misc Cont Yard Structures	-	8	-	-	-	-	-	1	9	9	-	-	-	-	-	-	-	-	105	-
4a.1.4.5	North Warehouse	-	1	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	16	-
4a.1.4.6	Radwaste	-	26	-	-	-	-	-	4	30	30	-	-	-	-	-	-	-	-	318	-
4a.1.4.7	Radwaste Compactor	-	0	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	4	-
4a.1.4.8	Turbine	-	237	-	-	-	-	-	36	273	273	-	-	-	-	-	-	-	-	2,999	-
4a.1.4.9	Vent Stack	-	0	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	5	-
4a.1.4	Totals	-	1,062	-	-	-	-	-	159	1,222	1,222	-	-	-	-	-	-	-	-	12,771	-
Reactor Building System Components																					
4a.1.5.1	RX-BLD-213-2_2	-	134	6	18	85	54	-	63	360	360	-	-	1,492	237	-	-	-	80,793	2,496	-
4a.1.5.2	RX-BLD-213-3_2	-	118	4	12	59	29	-	48	270	270	-	-	1,043	130	-	-	-	53,400	2,210	-

Table C-2
Vermont Yankee Nuclear Power Station
Scenario 2: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Reactor Building System Components (continued)																					
4a.1.5.3	RX-BLD-213-4_2	-	123	3	8	37	23	-	44	238	238	-	-	658	102	-	-	-	35,392	2,305	-
4a.1.5.4	RX-BLD-213-5_2	-	219	16	46	201	144	-	129	755	755	-	-	3,531	637	-	-	-	197,501	4,086	-
4a.1.5.5	RX-BLD-232-2_2	-	111	8	22	93	69	-	63	366	366	-	-	1,640	307	-	-	-	92,729	2,073	-
4a.1.5.6	RX-BLD-232-3_2	-	100	7	20	88	65	-	58	339	339	-	-	1,556	287	-	-	-	87,560	1,875	-
4a.1.5.7	RX-BLD-232-4_2	-	49	1	3	13	8	-	17	91	91	-	-	225	37	-	-	-	12,298	888	-
4a.1.5.8	RX-BLD-232-5_2	-	55	2	5	26	15	-	22	125	125	-	-	449	68	-	-	-	24,053	990	-
4a.1.5.9	RX-BLD-252-10_2	-	9	0	0	2	-	-	3	14	14	-	-	38	-	-	-	-	1,538	170	-
4a.1.5.10	RX-BLD-252-1_2	-	7	0	0	2	-	-	2	10	10	-	-	27	-	-	-	-	1,086	119	-
4a.1.5.11	RX-BLD-252-1_3	-	3	0	0	-	1	-	1	5	5	-	-	-	5	-	-	-	427	52	-
4a.1.5.12	RX-BLD-252-2_2	-	35	2	7	29	23	-	20	116	116	-	-	502	100	-	-	-	28,864	651	-
4a.1.5.13	RX-BLD-252-3_2	-	44	1	3	16	4	-	15	82	82	-	-	276	16	-	-	-	12,590	823	-
4a.1.5.14	RX-BLD-252-3_3	-	2	0	0	-	2	-	1	6	6	-	-	-	10	-	-	-	863	40	-
4a.1.5.15	RX-BLD-252-4_2	-	92	2	13	102	-	-	41	251	251	-	-	1,796	-	-	-	-	72,928	1,733	-
4a.1.5.16	RX-BLD-252-4_3	-	1	0	0	-	1	-	0	2	2	-	-	-	3	-	-	-	234	14	-
4a.1.5.17	RX-BLD-252-5_2	-	229	3	20	156	-	-	84	492	492	-	-	2,738	-	-	-	-	111,209	4,207	-
4a.1.5.18	RX-BLD-252-5_3	-	103	11	13	-	97	-	53	277	277	-	-	-	427	-	-	-	36,281	1,647	-
4a.1.5.19	RX-BLD-252-6_2	-	191	3	15	116	-	-	68	392	392	-	-	2,045	-	-	-	-	83,064	3,496	-
4a.1.5.20	RX-BLD-252-6_3	-	106	12	14	-	104	-	56	292	292	-	-	-	459	-	-	-	39,016	1,712	-
4a.1.5.21	RX-BLD-252-7_2	-	172	1	8	62	-	-	54	297	297	-	-	1,094	-	-	-	-	44,442	3,163	-
4a.1.5.22	RX-BLD-252-8_2	-	52	1	3	26	-	-	18	100	100	-	-	463	-	-	-	-	18,797	954	-
4a.1.5.23	RX-BLD-252-9_2	-	86	1	5	29	7	-	28	156	156	-	-	511	29	-	-	-	23,198	1,579	-
4a.1.5.24	RX-BLD-252-9_3	-	19	2	4	-	27	-	12	65	65	-	-	-	121	-	-	-	10,281	339	-
4a.1.5	Totals	-	2,060	87	240	1,142	673	-	899	5,101	5,101	-	-	20,083	2,977	-	-	-	1,068,545	37,623	-
Turbine Building System Components																					
4a.1.6.1	TURB-BLD-222-10_2	-	97	1	5	42	-	-	31	176	176	-	-	735	-	-	-	-	29,859	1,836	-
4a.1.6.2	TURB-BLD-222-11_2	-	60	1	3	24	-	-	19	106	106	-	-	422	-	-	-	-	17,121	1,115	-
4a.1.6.3	TURB-BLD-222-1_2	-	388	9	53	412	-	-	168	1,030	1,030	-	-	7,245	-	-	-	-	294,230	7,209	-
4a.1.6.4	TURB-BLD-222-2_2	-	302	10	62	475	-	-	157	1,006	1,006	-	-	8,362	-	-	-	-	339,601	5,576	-
4a.1.6.5	TURB-BLD-222-3_2	-	86	3	16	119	-	-	42	265	265	-	-	2,101	-	-	-	-	85,320	1,579	-
4a.1.6.6	TURB-BLD-222-8_2	-	248	2	14	107	-	-	81	452	452	-	-	1,885	-	-	-	-	76,566	4,680	-
4a.1.6.7	TURB-BLD-222-9_2	-	141	11	66	510	-	-	123	851	851	-	-	8,970	-	-	-	-	364,295	2,629	-
4a.1.6.8	TURB-BLD-228-12_2	-	200	2	10	77	-	-	63	352	352	-	-	1,355	-	-	-	-	55,030	3,702	-
4a.1.6.9	TURB-BLD-228-13_2	-	130	1	5	38	-	-	39	212	212	-	-	666	-	-	-	-	27,061	2,432	-
4a.1.6.10	TURB-BLD-228-1_2	-	124	2	12	90	-	-	46	274	274	-	-	1,584	-	-	-	-	64,321	2,279	-
4a.1.6.11	TURB-BLD-228-2_2	-	365	14	84	650	-	-	203	1,317	1,317	-	-	11,437	-	-	-	-	464,451	6,827	-
4a.1.6.12	TURB-BLD-228-3_2	-	310	7	41	312	-	-	131	800	800	-	-	5,486	-	-	-	-	222,807	5,785	-
4a.1.6.13	TURB-BLD-228-4_2	-	345	8	47	362	-	-	148	910	910	-	-	6,374	-	-	-	-	258,860	6,410	-
4a.1.6.14	TURB-BLD-228-5_2	-	163	4	27	207	-	-	76	478	478	-	-	3,648	-	-	-	-	148,129	3,001	-
4a.1.6.15	TURB-BLD-228-6_2	-	135	4	23	175	-	-	64	400	400	-	-	3,075	-	-	-	-	124,888	2,491	-
4a.1.6	Totals	-	3,093	78	468	3,602	-	-	1,391	8,632	8,632	-	-	63,347	-	-	-	-	2,572,537	57,553	-
Augmented Offgas Building System Components																					
4a.1.7.1	AOG-BLD-FL1-1_2	-	31	0	2	17	-	-	11	61	61	-	-	293	-	-	-	-	11,904	569	-
4a.1.7.2	AOG-BLD-FL1-2_2	-	95	2	13	98	-	-	40	248	248	-	-	1,724	-	-	-	-	70,026	1,741	-
4a.1.7.3	AOG-BLD-FL1-3_2	-	94	2	12	89	-	-	39	236	236	-	-	1,572	-	-	-	-	63,838	1,690	-
4a.1.7.4	AOG-BLD-FL1-4_2	-	99	2	9	72	-	-	37	219	219	-	-	1,260	-	-	-	-	51,189	1,771	-
4a.1.7.5	AOG-BLD-FL1-5_2	-	98	1	6	48	-	-	33	186	186	-	-	849	-	-	-	-	34,481	1,796	-
4a.1.7.6	AOG-BLD-FL2-1_2	-	61	1	7	56	-	-	25	150	150	-	-	990	-	-	-	-	40,198	1,108	-
4a.1.7.7	AOG-BLD-FL2-2_2	-	7	0	0	3	-	-	2	13	13	-	-	55	-	-	-	-	2,232	133	-
4a.1.7.8	AOG-BLD-FL2-3_2	-	7	0	0	3	-	-	2	12	12	-	-	52	-	-	-	-	2,128	121	-
4a.1.7.9	AOG-BLD-FL2-4_2	-	52	1	7	55	-	-	22	138	138	-	-	965	-	-	-	-	39,196	947	-
4a.1.7.10	AOG-BLD-FL2-5_2	-	7	0	0	2	-	-	2	11	11	-	-	30	-	-	-	-	1,212	125	-
4a.1.7.11	AOG-BLD-FL2-6_2	-	6	0	0	3	-	-	2	12	12	-	-	52	-	-	-	-	2,128	114	-
4a.1.7.12	AOG-BLD-FL2-7_2	-	30	0	1	10	-	-	9	51	51	-	-	176	-	-	-	-	7,154	539	-
4a.1.7.13	AOG-BLD-FL2-8_2	-	15	0	1	6	-	-	5	26	26	-	-	101	-	-	-	-	4,118	263	-
4a.1.7.14	AOG-BLD-FL2-9_2	-	95	2	13	98	-	-	41	248	248	-	-	1,715	-	-	-	-	69,653	1,717	-
4a.1.7.15	AOG-BLDG-1_2	-	48	2	5	14	20	-	20	108	108	-	-	250	86	-	-	-	17,504	862	-
4a.1.7.16	AOG-BLDG-2_2	-	168	1	3	7	14	-	47	240	240	-	-	128	66	-	-	-	10,462	2,484	-
4a.1.7.17	AOG-BLDG-PENT_2	-	34	0	3	21	-	-	12	71	71	-	-	377	-	-	-	-	15,291	605	-
4a.1.7.18	AOG-BLDG-RF_2	-	73	2	10	78	-	-	32	195	195	-	-	1,375	-	-	-	-	55,841	1,292	-

Table C-2
Vermont Yankee Nuclear Power Station
Scenario 2: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
4a.1.7	Totals	-	1,018	17	93	680	34	-	381	2,223	2,223	-	-	11,965	152	-	-	-	498,555	17,875	-
4a.1.8	Scaffolding in support of decommissioning	-	593	25	12	92	-	-	166	888	888	-	-	1,458	-	-	-	-	65,595	11,723	-
4a.1	Subtotal Period 4a Activity Costs	130	17,633	12,229	3,776	12,248	8,800	505	18,321	73,641	73,641	-	-	202,602	20,965	1,377	230	-	10,751,490	210,494	2,507
Period 4a Additional Costs																					
4a.2.1	Retired Low Presure Turbine Rotors	-	-	31	19	1,868	-	-	286	2,204	2,204	-	-	2,723	-	-	-	-	1,334,256	640	-
4a.2	Subtotal Period 4a Additional Costs	-	-	31	19	1,868	-	-	286	2,204	2,204	-	-	2,723	-	-	-	-	1,334,256	640	-
Period 4a Collateral Costs																					
4a.3.1	Process decommissioning water waste	5	-	4	33	-	33	-	16	93	93	-	-	-	83	-	-	-	4,966	16	-
4a.3.3	Small tool allowance	-	154	-	-	-	-	-	23	177	159	-	18	-	-	-	-	-	-	-	-
4a.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	253	38	291	-	291	-	-	-	-	-	-	-	-	-
4a.3	Subtotal Period 4a Collateral Costs	5	154	4	33	-	33	253	77	560	252	291	18	-	83	-	-	-	4,966	16	-
Period 4a Period-Dependent Costs																					
4a.4.1	Decon supplies	52	-	-	-	-	-	-	13	65	65	-	-	-	-	-	-	-	-	-	-
4a.4.2	Insurance	-	-	-	-	-	-	534	53	587	587	-	-	-	-	-	-	-	-	-	-
4a.4.3	Property taxes	-	-	-	-	-	-	9	1	10	9	-	1	-	-	-	-	-	-	-	-
4a.4.4	Health physics supplies	-	1,114	-	-	-	-	-	279	1,393	1,393	-	-	-	-	-	-	-	-	-	-
4a.4.5	Heavy equipment rental	-	1,880	-	-	-	-	-	282	2,163	2,163	-	-	-	-	-	-	-	-	-	-
4a.4.6	Disposal of DAW generated	-	-	65	61	-	279	-	85	490	490	-	-	-	3,764	-	-	-	75,278	123	-
4a.4.7	Plant energy budget	-	-	-	-	-	-	1,423	213	1,636	1,636	-	-	-	-	-	-	-	-	-	-
4a.4.8	NRC Fees	-	-	-	-	-	-	639	64	703	703	-	-	-	-	-	-	-	-	-	-
4a.4.9	Emergency Planning Fees	-	-	-	-	-	-	462	46	508	-	508	-	-	-	-	-	-	-	-	-
4a.4.10	Site O&M	-	-	-	-	-	-	265	40	305	305	-	-	-	-	-	-	-	-	-	-
4a.4.11	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	495	74	569	569	-	-	-	-	-	-	-	-	-	-
4a.4.12	ISFSI Operating Costs	-	-	-	-	-	-	114	17	131	-	131	-	-	-	-	-	-	-	-	-
4a.4.13	Corporate A&G	-	-	-	-	-	-	2,626	394	3,020	3,020	-	-	-	-	-	-	-	-	-	-
4a.4.14	Security Staff Cost	-	-	-	-	-	-	2,981	447	3,428	3,428	-	-	-	-	-	-	-	-	-	83,214
4a.4.15	DOC Staff Cost	-	-	-	-	-	-	15,540	2,331	17,871	17,871	-	-	-	-	-	-	-	-	-	183,737
4a.4.16	Utility Staff Cost	-	-	-	-	-	-	19,204	2,881	22,085	22,085	-	-	-	-	-	-	-	-	-	332,857
4a.4	Subtotal Period 4a Period-Dependent Costs	52	2,995	65	61	-	279	44,291	7,220	54,963	54,322	639	1	-	3,764	-	-	-	75,278	123	599,809
4a.0	TOTAL PERIOD 4a COST	187	20,782	12,329	3,889	14,116	9,112	45,049	25,905	131,368	130,419	930	19	205,325	24,812	1,377	230	-	12,165,990	211,273	602,315
PERIOD 4b - Site Decontamination																					
Reactor Building System Components																					
4b.1.2.1	RX-BLD-213-1_2	-	1,048	30	157	1,150	58	-	475	2,918	2,918	-	-	20,227	255	-	-	-	843,080	21,042	-
4b.1.2.2	RX-BLD-213-1_3	-	50	7	12	-	90	-	38	197	197	-	-	-	397	-	-	-	33,774	932	-
4b.1.2.3	RX-BLD-232-1_2	-	464	34	98	405	331	-	277	1,609	1,609	-	-	7,129	1,463	-	-	-	413,865	8,461	-
4b.1.2.4	RX-BLD-232-1_3	-	22	2	3	-	23	-	12	63	63	-	-	-	103	-	-	-	8,738	374	-
4b.1.2.5	RX-BLD-280-1_2	-	22	0	1	8	-	-	7	38	38	-	-	143	-	-	-	-	5,794	415	-
4b.1.2.6	RX-BLD-280-1_3	-	48	4	7	-	53	-	27	139	139	-	-	-	234	-	-	-	19,900	903	-
4b.1.2.7	RX-BLD-280-2_2	-	27	1	2	8	8	-	10	57	57	-	-	147	37	-	-	-	9,122	491	-
4b.1.2.8	RX-BLD-280-2_3	-	72	13	24	-	177	-	67	354	354	-	-	-	785	-	-	-	66,718	1,359	-
4b.1.2.9	RX-BLD-280-3_2	-	191	5	31	235	-	-	88	550	550	-	-	4,139	-	-	-	-	168,090	3,467	-
4b.1.2.10	RX-BLD-280-4_2	-	79	1	5	39	-	-	26	150	150	-	-	692	-	-	-	-	28,115	1,430	-
4b.1.2.11	RX-BLD-280-5_2	-	161	2	10	74	-	-	53	299	299	-	-	1,303	-	-	-	-	52,897	2,944	-
4b.1.2.12	RX-BLD-280-6_2	-	175	2	10	76	-	-	57	319	319	-	-	1,336	-	-	-	-	54,249	3,219	-
4b.1.2.13	RX-BLD-280-7_2	-	142	3	19	144	-	-	60	369	369	-	-	2,538	-	-	-	-	103,081	2,587	-
4b.1.2.14	RX-BLD-280-ROOF_2	-	26	2	11	86	-	-	21	147	147	-	-	1,519	-	-	-	-	61,692	476	-
4b.1.2.15	RX-BLD-303-1_2	-	39	1	3	16	9	-	15	83	83	-	-	279	38	-	-	-	14,546	749	-
4b.1.2.16	RX-BLD-303-1_3	-	134	25	40	-	295	-	116	610	610	-	-	-	1,307	-	-	-	111,075	2,513	-
4b.1.2.17	RX-BLD-303-2_3	-	57	7	10	-	72	-	34	179	179	-	-	-	381	-	-	-	26,893	1,063	-
4b.1.2.18	RX-BLD-303-3_3	-	20	1	1	-	10	-	8	41	41	-	-	-	45	-	-	-	3,831	381	-
4b.1.2.19	RX-BLD-303-4_2	-	191	4	24	185	-	-	80	484	484	-	-	3,258	-	-	-	-	132,305	3,439	-
4b.1.2.20	RX-BLD-303-5_2	-	20	0	1	7	-	-	6	34	34	-	-	116	-	-	-	-	4,694	376	-
4b.1.2.21	RX-BLD-303-6_2	-	11	0	0	3	-	-	3	18	18	-	-	56	-	-	-	-	2,262	210	-
4b.1.2.22	RX-BLD-303-7_2	-	82	1	9	67	-	-	32	191	191	-	-	1,178	-	-	-	-	47,837	1,510	-

Table C-2
Vermont Yankee Nuclear Power Station
Scenario 2: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Reactor Building System Components (continued)																					
4b.1.2.23	RX-BLD-303-7_3	-	21	3	5	-	35	-	15	79	79	-	-	-	157	-	-	-	13,334	364	-
4b.1.2.24	RX-BLD-303-8_2	-	73	1	5	40	-	-	25	143	143	-	-	697	-	-	-	-	28,313	1,300	-
4b.1.2.25	RX-BLD-318-1_3	-	17	1	2	-	12	-	8	39	39	-	-	-	60	-	-	-	4,371	327	-
4b.1.2.26	RX-BLD-318-2_3	-	33	3	3	-	24	-	15	78	78	-	-	-	106	-	-	-	9,021	585	-
4b.1.2.27	RX-BLD-318-3_3	-	25	2	3	-	21	-	12	62	62	-	-	-	92	-	-	-	7,792	444	-
4b.1.2.28	RX-BLD-318-4_2	-	512	7	45	343	-	-	187	1,093	1,093	-	-	6,034	-	-	-	-	245,044	9,436	-
4b.1.2.29	RX-BLD-318-4_3	-	13	1	2	-	15	-	7	39	39	-	-	-	66	-	-	-	5,636	221	-
4b.1.2.30	RX-BLD-318-5_2	-	90	2	9	72	-	-	35	207	207	-	-	1,260	-	-	-	-	51,163	1,625	-
4b.1.2.31	RX-BLD-318-6_2	-	49	0	3	23	-	-	16	91	91	-	-	408	-	-	-	-	16,581	833	-
4b.1.2.32	RX-BLD-318-7_2	-	40	1	4	29	-	-	15	88	88	-	-	503	-	-	-	-	20,423	722	-
4b.1.2.33	RX-BLD-345-1_3	-	267	1	1	-	7	-	69	345	345	-	-	-	31	-	-	-	2,619	5,186	-
4b.1.2.34	RX-BLD-345-2_3	-	188	0	0	-	2	-	47	237	237	-	-	-	7	-	-	-	631	3,647	-
4b.1.2.35	RX-BLD-345-3_2	-	411	0	1	9	-	-	104	525	525	-	-	152	-	-	-	-	6,168	7,967	-
4b.1.2.36	RX-BLD-345-3_3	-	5	1	1	-	7	-	3	17	17	-	-	-	32	-	-	-	2,760	91	-
4b.1.2.37	RX-BLD-345-4_2	-	5	0	0	1	-	-	1	7	7	-	-	9	-	-	-	-	380	91	-
4b.1.2.38	RX-BLD-345-5_2	-	47	1	4	30	-	-	17	99	99	-	-	535	-	-	-	-	21,741	844	-
4b.1.2.39	RX-BLD-345-6_2	-	60	1	3	24	-	-	19	107	107	-	-	425	-	-	-	-	17,249	1,107	-
4b.1.2.40	RX-BLD-345-7_2	-	35	1	3	25	-	-	13	77	77	-	-	434	-	-	-	-	17,613	638	-
4b.1.2.41	RX-BLD-345-8_2	-	37	0	2	19	-	-	12	70	70	-	-	326	-	-	-	-	13,225	653	-
4b.1.2.42	RX-BLD-DW_2	-	276	8	23	109	68	-	107	592	592	-	-	1,913	303	-	-	-	103,413	5,189	-
4b.1.2.43	RX-BLD-DW_3	-	491	129	197	-	1,446	-	527	2,790	2,790	-	-	-	6,396	-	-	-	543,518	9,060	-
4b.1.2	Totals	-	5,776	306	796	3,227	2,763	-	2,769	15,636	15,636	-	-	56,755	12,297	-	-	-	3,343,552	108,668	-
Turbine Building System Components																					
4b.1.3.1	TURB-BLD-232-1_2	-	127	2	10	77	-	-	45	262	262	-	-	1,363	-	-	-	-	55,351	2,391	-
4b.1.3.2	TURB-BLD-232-2_2	-	225	3	16	125	-	-	78	446	446	-	-	2,193	-	-	-	-	89,075	4,121	-
4b.1.3.3	TURB-BLD-232-3_2	-	143	1	7	55	-	-	45	252	252	-	-	975	-	-	-	-	39,615	2,624	-
4b.1.3.4	TURB-BLD-232-4_2	-	112	1	5	39	-	-	35	192	192	-	-	693	-	-	-	-	28,131	2,039	-
4b.1.3.5	TURB-BLD-232-5_2	-	150	1	9	67	-	-	49	276	276	-	-	1,175	-	-	-	-	47,717	2,772	-
4b.1.3.6	TURB-BLD-232-6_2	-	174	1	8	64	-	-	54	301	301	-	-	1,117	-	-	-	-	45,362	3,202	-
4b.1.3.7	TURB-BLD-232-7_2	-	117	1	6	43	-	-	36	202	202	-	-	751	-	-	-	-	30,484	2,154	-
4b.1.3.8	TURB-BLD-246-1_2	-	110	3	16	127	-	-	49	305	305	-	-	2,235	-	-	-	-	90,750	2,025	-
4b.1.3.9	TURB-BLD-248-1_2	-	110	2	11	88	-	-	42	253	253	-	-	1,542	-	-	-	-	62,614	2,048	-
4b.1.3.10	TURB-BLD-248-2_2	-	154	1	6	44	-	-	46	251	251	-	-	776	-	-	-	-	31,504	2,935	-
4b.1.3.11	TURB-BLD-248-3_2	-	287	8	49	379	-	-	137	860	860	-	-	6,672	-	-	-	-	270,947	5,319	-
4b.1.3.12	TURB-BLD-248-4_2	-	198	6	38	290	-	-	99	631	631	-	-	5,106	-	-	-	-	207,358	3,677	-
4b.1.3.13	TURB-BLD-248-5_2	-	51	1	5	42	-	-	20	120	120	-	-	744	-	-	-	-	30,197	936	-
4b.1.3.14	TURB-BLD-248-6_2	-	115	2	10	76	-	-	42	244	244	-	-	1,341	-	-	-	-	54,475	2,115	-
4b.1.3.15	TURB-BLD-248-7_2	-	71	2	12	89	-	-	33	206	206	-	-	1,567	-	-	-	-	63,655	1,306	-
4b.1.3.16	TURB-BLD-252-10_2	-	141	1	7	51	-	-	44	243	243	-	-	895	-	-	-	-	36,360	2,658	-
4b.1.3.17	TURB-BLD-252-13_2	-	123	1	5	36	-	-	37	201	201	-	-	626	-	-	-	-	25,426	2,252	-
4b.1.3.18	TURB-BLD-252-14_2	-	91	1	5	38	-	-	29	165	165	-	-	672	-	-	-	-	27,287	1,675	-
4b.1.3.19	TURB-BLD-252-1_2	-	89	3	18	137	-	-	46	293	293	-	-	2,414	-	-	-	-	98,015	1,605	-
4b.1.3.20	TURB-BLD-252-2_2	-	87	3	17	135	-	-	45	287	287	-	-	2,366	-	-	-	-	96,086	1,581	-
4b.1.3.21	TURB-BLD-252-3_2	-	21	0	1	11	-	-	7	41	41	-	-	196	-	-	-	-	7,972	379	-
4b.1.3.22	TURB-BLD-252-4_2	-	26	0	1	5	-	-	7	39	39	-	-	83	-	-	-	-	3,381	504	-
4b.1.3.23	TURB-BLD-252-5_2	-	178	1	8	58	-	-	54	299	299	-	-	1,021	-	-	-	-	41,454	3,373	-
4b.1.3.24	TURB-BLD-252-6_2	-	63	0	1	5	-	-	17	86	86	-	-	96	-	-	-	-	3,915	1,202	-
4b.1.3.25	TURB-BLD-252-7_2	-	73	2	14	104	-	-	36	229	229	-	-	1,831	-	-	-	-	74,360	1,194	-
4b.1.3.26	TURB-BLD-252-8_2	-	25	0	2	14	-	-	9	50	50	-	-	240	-	-	-	-	9,763	422	-
4b.1.3.27	TURB-BLD-252-9_2	-	104	2	15	119	-	-	46	288	288	-	-	2,095	-	-	-	-	85,062	1,739	-
4b.1.3.28	TURB-BLD-272-1_2	-	27	1	6	43	-	-	14	90	90	-	-	750	-	-	-	-	30,443	503	-
4b.1.3.29	TURB-BLD-272-3_2	-	324	3	18	139	-	-	105	588	588	-	-	2,442	-	-	-	-	99,166	5,817	-
4b.1.3.30	TURB-BLD-272-4_2	-	68	2	13	104	-	-	35	222	222	-	-	1,824	-	-	-	-	74,084	1,103	-
4b.1.3.31	TURB-BLD-272-5_2	-	51	1	9	68	-	-	24	154	154	-	-	1,199	-	-	-	-	48,693	776	-
4b.1.3.32	TURB-BLD-272-6_2	-	70	2	13	102	-	-	35	222	222	-	-	1,792	-	-	-	-	72,779	1,065	-
4b.1.3.33	TURB-BLD-272-9_0	-	12	-	-	-	-	-	2	13	-	-	13	-	-	-	-	-	-	212	-
4b.1.3	Totals	-	3,714	59	360	2,774	-	-	1,403	8,311	8,298	-	13	48,792	-	-	-	-	1,981,480	67,725	-

Table C-2
Vermont Yankee Nuclear Power Station
Scenario 2: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Control/Radwaste/Other Building System Components																					
4b.1.4.1	CONT-BLD-248-1_0	-	144	-	-	-	-	-	22	165	-	-	165	-	-	-	-	-	-	2,578	-
4b.1.4.2	CONT-BLD-248-1_2	-	1	0	0	1	-	-	0	2	2	-	-	9	-	-	-	-	372	10	-
4b.1.4.3	CONT-BLD-248-2_0	-	4	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	74	-
4b.1.4.4	CONT-BLD-262-1_0	-	110	-	-	-	-	-	16	126	-	-	126	-	-	-	-	-	-	1,974	-
4b.1.4.5	CONT-BLD-272-1_0	-	48	-	-	-	-	-	7	55	-	-	55	-	-	-	-	-	-	874	-
4b.1.4.6	CST-BASE-TRENCH_2	-	349	8	46	357	-	-	149	909	909	-	-	6,273	-	-	-	-	254,747	6,391	-
4b.1.4.7	CT_0	-	205	-	-	-	-	-	31	236	-	-	236	-	-	-	-	-	-	3,726	-
4b.1.4.8	DISCHARGE-STR_0	-	61	-	-	-	-	-	9	70	-	-	70	-	-	-	-	-	-	1,111	-
4b.1.4.9	DST-BASE_0	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	367	-
4b.1.4.10	INTAKE-STR_0	-	148	-	-	-	-	-	22	170	-	-	170	-	-	-	-	-	-	2,675	-
4b.1.4.11	NORTH-WAREHOUSE_2	-	26	0	1	9	-	-	8	45	45	-	-	165	-	-	-	-	6,694	477	-
4b.1.4.12	RW-BLD-230-1_3	-	93	12	18	-	133	-	60	317	317	-	-	-	721	-	-	-	50,021	1,745	-
4b.1.4.13	RW-BLD-230-2_3	-	122	18	26	-	191	-	84	441	441	-	-	-	1,051	-	-	-	71,955	2,282	-
4b.1.4.14	RW-BLD-230-3_3	-	53	5	7	-	51	-	28	143	143	-	-	-	238	-	-	-	19,202	974	-
4b.1.4.15	RW-BLD-230-4_3	-	37	4	6	-	46	-	22	116	116	-	-	-	249	-	-	-	17,241	697	-
4b.1.4.16	RW-BLD-230-5_3	-	29	3	4	-	32	-	16	84	84	-	-	-	171	-	-	-	12,002	545	-
4b.1.4.17	RW-BLD-230-7_3	-	141	12	18	-	134	-	73	378	378	-	-	-	594	-	-	-	50,458	2,509	-
4b.1.4.18	RW-BLD-246-8_2	-	40	2	3	5	18	-	16	83	83	-	-	92	79	-	-	-	10,493	712	-
4b.1.4.19	RW-BLD-252-10_2	-	13	0	0	3	-	-	4	21	21	-	-	52	-	-	-	-	2,100	257	-
4b.1.4.20	RW-BLD-252-11_2	-	12	0	1	7	-	-	4	24	24	-	-	120	-	-	-	-	4,869	222	-
4b.1.4.21	RW-BLD-252-12_2	-	90	1	9	67	-	-	34	201	201	-	-	1,179	-	-	-	-	47,870	1,614	-
4b.1.4.22	RW-BLD-252-13_2	-	73	2	7	47	8	-	29	166	166	-	-	819	44	-	-	-	36,442	1,321	-
4b.1.4.23	RW-BLD-252-1_2	-	63	0	2	16	-	-	19	100	100	-	-	283	-	-	-	-	11,513	1,203	-
4b.1.4.24	RW-BLD-252-2_2	-	35	1	4	20	11	-	15	87	87	-	-	344	49	-	-	-	18,159	665	-
4b.1.4.25	RW-BLD-252-3_2	-	15	0	1	5	-	-	5	25	25	-	-	86	-	-	-	-	3,500	282	-
4b.1.4.26	RW-BLD-252-4_2	-	25	0	1	9	-	-	8	43	43	-	-	150	-	-	-	-	6,078	481	-
4b.1.4.27	RW-BLD-252-5_2	-	37	0	3	20	-	-	13	72	72	-	-	351	-	-	-	-	14,258	666	-
4b.1.4.28	RW-BLD-252-6_3	-	69	8	10	-	75	-	38	200	200	-	-	-	331	-	-	-	28,118	1,267	-
4b.1.4.29	RW-BLD-252-7_3	-	23	2	3	-	23	-	12	64	64	-	-	-	123	-	-	-	8,810	434	-
4b.1.4.30	RW-BLD-252-8_2	-	41	1	3	11	12	-	15	84	84	-	-	198	53	-	-	-	12,560	739	-
4b.1.4.31	RW-BLD-252-9_3	-	44	3	5	-	37	-	21	110	110	-	-	-	182	-	-	-	13,871	802	-
4b.1.4.32	RW-BLD-264-1_2	-	4	0	0	0	-	-	1	5	5	-	-	2	-	-	-	-	86	78	-
4b.1.4.33	RW-BLD-264-2_2	-	5	0	0	1	-	-	1	7	7	-	-	11	-	-	-	-	454	100	-
4b.1.4.34	RW-BLD-264-RF_2	-	16	0	1	8	1	-	6	32	32	-	-	135	5	-	-	-	5,877	305	-
4b.1.4.35	RW-BLD-280-1_2	-	11	0	1	8	-	-	4	25	25	-	-	142	-	-	-	-	5,769	220	-
4b.1.4.36	RW-BLD-280-2_2	-	9	0	0	2	-	-	2	13	13	-	-	27	-	-	-	-	1,082	166	-
4b.1.4.37	SERV-BLD-248-1_2	-	68	1	3	25	-	-	21	118	118	-	-	440	-	-	-	-	17,867	1,263	-
4b.1.4.38	STACK_2	-	64	1	4	33	-	-	22	124	124	-	-	584	-	-	-	-	23,712	1,147	-
4b.1.4.39	YARD-252-CONT_2	-	557	27	160	1,235	-	-	351	2,330	2,330	-	-	21,717	-	-	-	-	881,922	10,121	-
4b.1.4.40	YARD-252-CONT_3	-	44	4	6	-	44	-	23	122	122	-	-	-	195	-	-	-	16,564	713	-
4b.1.4.41	YARD-252_0	-	297	-	-	-	-	-	45	342	-	-	342	-	-	-	-	-	-	5,517	-
4b.1.4	Totals	-	3,246	117	356	1,886	817	-	1,260	7,683	6,490	-	1,193	33,178	4,085	-	-	-	1,654,669	59,299	-
4b.1.5	Scaffolding in support of decommissioning	-	890	38	18	138	-	-	250	1,332	1,332	-	-	2,187	-	-	-	-	98,393	17,585	-
Decontamination of Site Buildings																					
4b.1.6.1	Reactor	2,225	1,213	131	436	2,865	243	-	1,985	9,098	9,098	-	-	50,400	4,240	-	-	-	2,314,493	56,618	-
4b.1.6.2	AOG	98	49	1	17	1	25	-	70	261	261	-	-	23	474	-	-	-	41,966	2,308	-
4b.1.6.3	Control	1	1	0	0	-	0	-	1	3	3	-	-	-	9	-	-	-	786	23	-
4b.1.6.4	Equipment Lock	7	1	0	2	-	2	-	5	17	17	-	-	-	43	-	-	-	3,708	127	-
4b.1.6.5	LLRW	1	-	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	11	-
4b.1.6.6	Misc Cont Yard Structures	96	97	2	29	-	44	-	88	355	355	-	-	-	825	-	-	-	71,454	3,044	-
4b.1.6.7	North Warehouse	35	4	0	5	-	7	-	21	71	71	-	-	-	131	-	-	-	11,310	600	-
4b.1.6.8	Radwaste	73	73	2	26	2	40	-	69	286	286	-	-	44	760	-	-	-	66,006	2,271	-
4b.1.6.9	Radwaste Compactor	3	5	0	2	-	3	-	4	16	16	-	-	-	52	-	-	-	4,494	124	-
4b.1.6.10	Service	1	9	0	3	-	5	-	4	22	22	-	-	-	88	-	-	-	7,662	148	-
4b.1.6.11	Turbine	551	236	9	112	95	154	-	405	1,563	1,563	-	-	1,673	2,908	-	-	-	316,622	12,330	-
4b.1.6.12	Vent Stack	3	30	1	11	-	16	-	15	75	75	-	-	-	305	-	-	-	26,448	510	-
4b.1.6.13	Reactor (post fuel)	159	369	29	491	44	729	-	437	2,258	2,258	-	-	768	13,783	-	-	-	1,223,993	8,113	-
4b.1.6	Totals	3,252	2,086	175	1,133	3,008	1,269	-	3,103	14,026	14,026	-	-	52,908	23,619	-	-	-	4,088,943	86,227	-

Table C-2
Vermont Yankee Nuclear Power Station
Scenario 2: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
4b.1	Subtotal Period 4b Activity Costs	3,252	15,712	694	2,663	11,033	4,849	-	8,785	46,989	45,783	-	1,206	193,819	40,001	-	-	-	11,167,040	339,504	-
Period 4b Additional Costs																					
4b.2.1	Remedial Action Support Surveys	-	-	-	-	-	-	3,043	913	3,955	3,955	-	-	-	-	-	-	-	-	20,800	-
4b.2.2	Soil Remediation	-	166	52	5,557	-	7,786	-	2,826	16,386	16,386	-	-	-	142,773	-	-	-	12,849,600	3,402	-
4b.2.3	Underground Services Excavations	-	1,365	-	-	-	-	-	205	1,569	1,569	-	-	-	-	-	-	-	-	15,911	-
4b.2.4	Asbestos Remediation	-	1,082	3	138	-	602	-	442	2,268	2,268	-	-	-	9,938	-	-	-	129,188	13,287	-
4b.2.5	Septic Field Removal	-	-	-	-	-	-	1,724	259	1,983	1,983	-	-	-	-	-	-	-	-	-	-
4b.2	Subtotal Period 4b Additional Costs	-	2,612	55	5,696	-	8,388	4,767	4,645	26,162	26,162	-	-	-	152,711	-	-	-	12,978,790	53,400	-
Period 4b Collateral Costs																					
4b.3.1	Process decommissioning water waste	12	-	11	83	-	82	-	40	229	229	-	-	-	205	-	-	-	12,306	40	-
4b.3.3	Small tool allowance	-	268	-	-	-	-	-	40	308	308	-	-	-	-	-	-	-	-	-	-
4b.3.4	Decommissioning Equipment Disposition	-	-	115	67	420	-	-	84	686	686	-	-	6,667	-	-	-	-	300,000	88	-
4b.3.5	Spent Fuel Capital and Transfer	-	-	-	-	-	-	394	59	453	-	453	-	-	-	-	-	-	-	-	-
4b.3.6	On-site survey and release of 25.85 tons clean metallic waste	-	-	-	-	-	-	28	3	31	31	-	-	-	-	-	-	-	-	-	-
4b.3	Subtotal Period 4b Collateral Costs	12	268	126	150	420	82	422	227	1,707	1,254	453	-	6,667	205	-	-	-	312,306	128	-
Period 4b Period-Dependent Costs																					
4b.4.1	Decon supplies	1,365	-	-	-	-	-	-	341	1,706	1,706	-	-	-	-	-	-	-	-	-	-
4b.4.2	Insurance	-	-	-	-	-	-	1,028	103	1,131	1,131	-	-	-	-	-	-	-	-	-	-
4b.4.3	Property taxes	-	-	-	-	-	-	17	2	18	18	-	-	-	-	-	-	-	-	-	-
4b.4.4	Health physics supplies	-	2,091	-	-	-	-	-	523	2,613	2,613	-	-	-	-	-	-	-	-	-	-
4b.4.5	Heavy equipment rental	-	3,595	-	-	-	-	-	539	4,134	4,134	-	-	-	-	-	-	-	-	-	-
4b.4.6	Disposal of DAW generated	-	-	103	96	-	444	-	136	779	779	-	-	-	5,986	-	-	-	119,715	195	-
4b.4.7	Plant energy budget	-	-	-	-	-	-	2,164	325	2,489	2,489	-	-	-	-	-	-	-	-	-	-
4b.4.8	NRC Fees	-	-	-	-	-	-	1,231	123	1,354	1,354	-	-	-	-	-	-	-	-	-	-
4b.4.9	Emergency Planning Fees	-	-	-	-	-	-	890	89	979	-	979	-	-	-	-	-	-	-	-	-
4b.4.10	Site O&M	-	-	-	-	-	-	511	77	588	588	-	-	-	-	-	-	-	-	-	-
4b.4.11	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	954	143	1,097	1,097	-	-	-	-	-	-	-	-	-	-
4b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	220	33	253	-	253	-	-	-	-	-	-	-	-	-
4b.4.13	Corporate A&G	-	-	-	-	-	-	4,836	725	5,561	5,561	-	-	-	-	-	-	-	-	-	-
4b.4.14	Security Staff Cost	-	-	-	-	-	-	5,744	862	6,605	6,605	-	-	-	-	-	-	-	-	-	160,357
4b.4.15	DOC Staff Cost	-	-	-	-	-	-	29,269	4,390	33,659	33,659	-	-	-	-	-	-	-	-	-	343,806
4b.4.16	Utility Staff Cost	-	-	-	-	-	-	35,158	5,274	40,431	40,431	-	-	-	-	-	-	-	-	-	605,509
4b.4	Subtotal Period 4b Period-Dependent Costs	1,365	5,685	103	96	-	444	82,021	13,684	103,398	102,166	1,232	-	-	5,986	-	-	-	119,715	195	1,109,671
4b.0	TOTAL PERIOD 4b COST	4,629	24,277	978	8,605	11,453	13,763	87,210	27,341	178,256	175,365	1,685	1,206	200,486	198,903	-	-	-	24,577,850	393,227	1,109,671
PERIOD 4f - License Termination																					
Period 4f Direct Decommissioning Activities																					
4f.1.1	ORISE confirmatory survey	-	-	-	-	-	-	149	45	194	194	-	-	-	-	-	-	-	-	-	-
4f.1.2	Terminate license									a											
4f.1	Subtotal Period 4f Activity Costs	-	-	-	-	-	-	149	45	194	194	-	-	-	-	-	-	-	-	-	-
Period 4f Additional Costs																					
4f.2.1	License Termination Survey	-	-	-	-	-	-	5,451	1,635	7,087	7,087	-	-	-	-	-	-	-	-	64,820	-
4f.2.2	Confirmation and Verification Survey	-	-	-	-	-	-	1,651	495	2,146	2,146	-	-	-	-	-	-	-	-	9,784	-
4f.2	Subtotal Period 4f Additional Costs	-	-	-	-	-	-	7,102	2,131	9,232	9,232	-	-	-	-	-	-	-	-	74,604	-
Period 4f Collateral Costs																					
4f.3.1	DOC staff relocation expenses	-	-	-	-	-	-	1,030	154	1,184	1,184	-	-	-	-	-	-	-	-	-	-
4f.3.2	Spent Fuel Capital and Transfer	-	-	-	-	-	-	104	16	120	-	120	-	-	-	-	-	-	-	-	-
4f.3	Subtotal Period 4f Collateral Costs	-	-	-	-	-	-	1,134	170	1,304	1,184	120	-	-	-	-	-	-	-	-	-
Period 4f Period-Dependent Costs																					
4f.4.1	Insurance	-	-	-	-	-	-	309	31	340	340	-	-	-	-	-	-	-	-	-	-
4f.4.2	Property taxes	-	-	-	-	-	-	5	1	6	6	-	-	-	-	-	-	-	-	-	-
4f.4.3	Health physics supplies	-	447	-	-	-	-	-	112	559	559	-	-	-	-	-	-	-	-	-	-
4f.4.4	Disposal of DAW generated	-	-	6	6	-	26	-	8	45	45	-	-	-	345	-	-	-	6,897	11	-
4f.4.5	Plant energy budget	-	-	-	-	-	-	174	26	200	200	-	-	-	-	-	-	-	-	-	-

Table C-2
Vermont Yankee Nuclear Power Station
Scenario 2: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 4f Period-Dependent Costs (continued)																					
4f.4.6	NRC Fees	-	-	-	-	-	-	371	37	408	408	-	-	-	-	-	-	-	-	-	-
4f.4.7	Emergency Planning Fees	-	-	-	-	-	-	268	27	294	-	294	-	-	-	-	-	-	-	-	-
4f.4.8	Site O&M	-	-	-	-	-	-	154	23	177	177	-	-	-	-	-	-	-	-	-	-
4f.4.9	ISFSI Operating Costs	-	-	-	-	-	-	66	10	76	-	76	-	-	-	-	-	-	-	-	-
4f.4.10	Corporate A&G	-	-	-	-	-	-	935	140	1,075	1,075	-	-	-	-	-	-	-	-	-	-
4f.4.11	Security Staff Cost	-	-	-	-	-	-	1,512	227	1,739	1,739	-	-	-	-	-	-	-	-	-	41,657
4f.4.12	DOC Staff Cost	-	-	-	-	-	-	4,903	735	5,638	5,638	-	-	-	-	-	-	-	-	-	56,314
4f.4.13	Utility Staff Cost	-	-	-	-	-	-	4,789	718	5,507	5,507	-	-	-	-	-	-	-	-	-	73,286
4f.4	Subtotal Period 4f Period-Dependent Costs	-	447	6	6	-	26	13,484	2,095	16,063	15,693	370	-	-	345	-	-	-	6,897	11	171,257
4f.0	TOTAL PERIOD 4f COST	-	447	6	6	-	26	21,869	4,440	26,793	26,303	490	-	-	345	-	-	-	6,897	74,615	171,257
PERIOD 4 TOTALS		4,816	45,506	13,313	12,499	25,569	22,901	154,128	57,686	336,417	332,087	3,106	1,225	405,811	224,059	1,377	230	-	36,750,730	679,115	1,883,244
PERIOD 5b - Site Restoration																					
Period 5b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
5b.1.1.1	Reactor	-	4,030	-	-	-	-	-	605	4,635	-	-	4,635	-	-	-	-	-	-	47,743	-
5b.1.1.2	AOG	-	1,617	-	-	-	-	-	243	1,859	-	-	1,859	-	-	-	-	-	-	19,704	-
5b.1.1.3	Bottle Storage Shed	-	6	-	-	-	-	-	1	7	-	-	7	-	-	-	-	-	-	81	-
5b.1.1.4	Construction Office	-	58	-	-	-	-	-	9	67	-	-	67	-	-	-	-	-	-	961	-
5b.1.1.5	Control	-	174	-	-	-	-	-	26	200	-	-	200	-	-	-	-	-	-	2,292	-
5b.1.1.6	Control Access	-	35	-	-	-	-	-	5	40	-	-	40	-	-	-	-	-	-	549	-
5b.1.1.7	Cooling Towers	-	1,857	-	-	-	-	-	279	2,136	-	-	2,136	-	-	-	-	-	-	30,896	-
5b.1.1.8	Discharge & Aerating Structures	-	207	-	-	-	-	-	31	238	-	-	238	-	-	-	-	-	-	1,615	-
5b.1.1.9	Equipment Lock	-	76	-	-	-	-	-	11	87	-	-	87	-	-	-	-	-	-	1,039	-
5b.1.1.10	Gatehouse 1	-	10	-	-	-	-	-	2	12	-	-	12	-	-	-	-	-	-	148	-
5b.1.1.11	Gatehouse 2	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	287	-
5b.1.1.12	Intake Structure	-	372	-	-	-	-	-	56	427	-	-	427	-	-	-	-	-	-	4,004	-
5b.1.1.13	LLRW	-	77	-	-	-	-	-	12	89	-	-	89	-	-	-	-	-	-	1,126	-
5b.1.1.14	Misc Cont Yard Structures	-	143	-	-	-	-	-	21	164	-	-	164	-	-	-	-	-	-	1,992	-
5b.1.1.15	Misc Yard Structures	-	501	-	-	-	-	-	75	576	-	-	576	-	-	-	-	-	-	6,685	-
5b.1.1.16	New Warehouse	-	257	-	-	-	-	-	39	296	-	-	296	-	-	-	-	-	-	4,052	-
5b.1.1.17	North Warehouse	-	56	-	-	-	-	-	8	64	-	-	64	-	-	-	-	-	-	649	-
5b.1.1.18	Office Area (Turbine Bldg)	-	102	-	-	-	-	-	15	117	-	-	117	-	-	-	-	-	-	1,530	-
5b.1.1.19	Piping and Excavations	-	967	-	-	-	-	-	145	1,112	-	-	1,112	-	-	-	-	-	-	4,877	-
5b.1.1.20	Radwaste	-	238	-	-	-	-	-	36	273	-	-	273	-	-	-	-	-	-	2,964	-
5b.1.1.21	Radwaste Compactor	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	70	-
5b.1.1.22	Security Modifications	-	518	-	-	-	-	-	78	596	-	-	596	-	-	-	-	-	-	4,901	-
5b.1.1.23	Service	-	62	-	-	-	-	-	9	71	-	-	71	-	-	-	-	-	-	949	-
5b.1.1.24	Turbine	-	2,318	-	-	-	-	-	348	2,665	-	-	2,665	-	-	-	-	-	-	30,292	-
5b.1.1.25	Turbine Pedestal	-	480	-	-	-	-	-	72	552	-	-	552	-	-	-	-	-	-	5,277	-
5b.1.1.26	Turbine Storage Facility	-	112	-	-	-	-	-	17	128	-	-	128	-	-	-	-	-	-	1,986	-
5b.1.1.27	Vent Stack	-	8	-	-	-	-	-	1	10	-	-	10	-	-	-	-	-	-	126	-
5b.1.1.28	Reactor (post fuel)	-	31	-	-	-	-	-	5	35	-	-	35	-	-	-	-	-	-	535	-
5b.1.1	Totals	-	14,336	-	-	-	-	-	2,150	16,487	-	-	16,487	-	-	-	-	-	-	177,331	-
Site Closeout Activities																					
5b.1.2	Grade & landscape site	-	457	-	-	-	-	-	69	526	-	-	526	-	-	-	-	-	-	1,052	-
5b.1.3	Final report to NRC	-	-	-	-	-	-	183	27	210	210	-	-	-	-	-	-	-	-	-	1,560
5b.1	Subtotal Period 5b Activity Costs	-	14,794	-	-	-	-	183	2,246	17,223	210	-	17,013	-	-	-	-	-	-	178,383	1,560
Period 5b Additional Costs																					
5b.2.1	Concrete Processing	-	435	-	313	-	-	567	197	1,512	-	-	1,512	-	-	-	-	-	-	2,402	-
5b.2.2	Intake & Discharge Cofferdams	-	621	-	-	-	-	-	93	714	-	-	714	-	-	-	-	-	-	6,400	-
5b.2.3	Backfill Underground Services Excavation	-	2,450	-	-	-	-	-	367	2,817	-	-	2,817	-	-	-	-	-	-	8,066	-
5b.2.4	Backfill Structures	-	1,931	-	-	-	-	-	290	2,220	-	-	2,220	-	-	-	-	-	-	6,358	-
5b.2	Subtotal Period 5b Additional Costs	-	5,436	-	313	-	-	567	947	7,263	-	-	7,263	-	-	-	-	-	-	23,226	-

Table C-2
Vermont Yankee Nuclear Power Station
Scenario 2: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 5b Collateral Costs																					
5b.3.1	Small tool allowance	-	155	-	-	-	-	-	23	178	-	-	178	-	-	-	-	-	-	-	-
5b.3.2	Spent Fuel Capital and Transfer	-	-	-	-	-	-	72	11	83	-	83	-	-	-	-	-	-	-	-	-
5b.3.3	Site O&M	-	-	-	-	-	-	208	31	239	-	-	239	-	-	-	-	-	-	-	-
5b.3	Subtotal Period 5b Collateral Costs	-	155	-	-	-	-	280	65	500	-	83	417	-	-	-	-	-	-	-	-
Period 5b Period-Dependent Costs																					
5b.4.1	Insurance	-	-	-	-	-	-	627	63	690	-	690	-	-	-	-	-	-	-	-	-
5b.4.2	Property taxes	-	-	-	-	-	-	10	1	11	-	11	-	-	-	-	-	-	-	-	-
5b.4.3	Heavy equipment rental	-	3,144	-	-	-	-	-	472	3,615	-	-	3,615	-	-	-	-	-	-	-	-
5b.4.4	Plant energy budget	-	-	-	-	-	-	176	26	203	-	-	203	-	-	-	-	-	-	-	-
5b.4.5	NRC ISFSI Fees	-	-	-	-	-	-	295	-	295	-	295	-	-	-	-	-	-	-	-	-
5b.4.6	Emergency Planning Fees	-	-	-	-	-	-	543	54	597	-	597	-	-	-	-	-	-	-	-	-
5b.4.7	ISFSI Operating Costs	-	-	-	-	-	-	134	20	154	-	154	-	-	-	-	-	-	-	-	-
5b.4.8	Corporate A&G	-	-	-	-	-	-	500	75	575	-	-	575	-	-	-	-	-	-	-	-
5b.4.9	Security Staff Cost	-	-	-	-	-	-	3,069	460	3,530	0	2,965	565	-	-	-	-	-	-	-	84,549
5b.4.10	DOC Staff Cost	-	-	-	-	-	-	9,655	1,448	11,103	-	-	11,103	-	-	-	-	-	-	-	106,469
5b.4.11	Utility Staff Cost	-	-	-	-	-	-	4,083	612	4,695	-	1,127	3,568	-	-	-	-	-	-	-	61,063
5b.4	Subtotal Period 5b Period-Dependent Costs	-	3,144	-	-	-	-	19,093	3,232	25,469	0	5,840	19,629	-	-	-	-	-	-	-	252,080
5b.0	TOTAL PERIOD 5b COST	-	23,528	-	313	-	-	20,122	6,491	50,454	210	5,922	44,322	-	-	-	-	-	-	201,609	253,640
PERIOD 5c - Fuel Storage Operations/Shipping																					
Period 5c Direct Decommissioning Activities																					
Period 5c Collateral Costs																					
5c.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	2,128	319	2,447	-	2,447	-	-	-	-	-	-	-	-	-
5c.3	Subtotal Period 5c Collateral Costs	-	-	-	-	-	-	2,128	319	2,447	-	2,447	-	-	-	-	-	-	-	-	-
Period 5c Period-Dependent Costs																					
5c.4.1	Insurance	-	-	-	-	-	-	3,864	386	4,251	-	4,251	-	-	-	-	-	-	-	-	-
5c.4.2	Property taxes	-	-	-	-	-	-	63	6	69	-	69	-	-	-	-	-	-	-	-	-
5c.4.3	Plant energy budget	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5c.4.4	NRC ISFSI Fees	-	-	-	-	-	-	1,815	-	1,815	-	1,815	-	-	-	-	-	-	-	-	-
5c.4.5	Emergency Planning Fees	-	-	-	-	-	-	3,345	334	3,679	-	3,679	-	-	-	-	-	-	-	-	-
5c.4.6	Site O&M	-	-	-	-	-	-	1,922	288	2,210	-	2,210	-	-	-	-	-	-	-	-	-
5c.4.7	ISFSI Operating Costs	-	-	-	-	-	-	827	124	951	-	951	-	-	-	-	-	-	-	-	-
5c.4.8	Corporate A&G	-	-	-	-	-	-	2,029	304	2,333	-	2,333	-	-	-	-	-	-	-	-	-
5c.4.9	Security Staff Cost	-	-	-	-	-	-	18,904	2,836	21,740	-	21,740	-	-	-	-	-	-	-	-	520,714
5c.4.10	Utility Staff Cost	-	-	-	-	-	-	8,249	1,237	9,486	-	9,486	-	-	-	-	-	-	-	-	130,179
5c.4	Subtotal Period 5c Period-Dependent Costs	-	-	-	-	-	-	41,018	5,517	46,534	-	46,534	-	-	-	-	-	-	-	-	650,893
5c.0	TOTAL PERIOD 5c COST	-	-	-	-	-	-	43,146	5,836	48,982	-	48,982	-	-	-	-	-	-	-	-	650,893
PERIOD 5d - GTCC shipping																					
Period 5d Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
5d.1.1.1	Vessel & Internals GTCC Disposal	-	-	500	-	-	4,926	-	789	6,215	6,215	-	-	-	-	-	-	1,785	347,940	-	-
5d.1.1	Totals	-	-	500	-	-	4,926	-	789	6,215	6,215	-	-	-	-	-	-	1,785	347,940	-	-
5d.1	Subtotal Period 5d Activity Costs	-	-	500	-	-	4,926	-	789	6,215	6,215	-	-	-	-	-	-	1,785	347,940	-	-
Period 5d Period-Dependent Costs																					
5d.4.1	Insurance	-	-	-	-	-	-	16	2	18	-	18	-	-	-	-	-	-	-	-	-
5d.4.2	Property taxes	-	-	-	-	-	-	0	0	0	-	0	-	-	-	-	-	-	-	-	-
5d.4.3	Plant energy budget	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5d.4.4	NRC ISFSI Fees	-	-	-	-	-	-	8	-	8	-	8	-	-	-	-	-	-	-	-	-
5d.4.5	Emergency Planning Fees	-	-	-	-	-	-	14	1	15	-	15	-	-	-	-	-	-	-	-	-
5d.4.6	Site O&M	-	-	-	-	-	-	8	1	9	-	9	-	-	-	-	-	-	-	-	-
5d.4.7	ISFSI Operating Costs	-	-	-	-	-	-	3	1	4	-	4	-	-	-	-	-	-	-	-	-

Table C-2
Vermont Yankee Nuclear Power Station
Scenario 2: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 5d Period-Dependent Costs (continued)																					
5d.4.8	Corporate A&G	-	-	-	-	-	-	8	1	10	-	10	-	-	-	-	-	-	-	-	-
5d.4.9	Security Staff Cost	-	-	-	-	-	-	78	12	90	-	90	-	-	-	-	-	-	-	-	2,160
5d.4.10	Utility Staff Cost	-	-	-	-	-	-	34	5	39	-	39	-	-	-	-	-	-	-	-	540
5d.4	Subtotal Period 5d Period-Dependent Costs	-	-	-	-	-	-	170	23	193	-	193	-	-	-	-	-	-	-	-	2,700
5d.0	TOTAL PERIOD 5d COST	-	-	500	-	-	4,926	170	812	6,408	6,215	193	-	-	-	-	-	1,785	347,940	-	2,700
PERIOD 5e - ISFSI Decontamination																					
Period 5e Direct Decommissioning Activities																					
Period 5e Additional Costs																					
5e.2.1	ISFSI License Termination	-	33	5	32	-	75	1,280	224	1,648	-	1,648	-	-	1,231	-	-	-	102,129	3,165	2,560
5e.2	Subtotal Period 5e Additional Costs	-	33	5	32	-	75	1,280	224	1,648	-	1,648	-	-	1,231	-	-	-	102,129	3,165	2,560
Period 5e Collateral Costs																					
5e.3.1	Small tool allowance	-	0	-	-	-	-	-	0	0	-	0	-	-	-	-	-	-	-	-	-
5e.3	Subtotal Period 5e Collateral Costs	-	0	-	-	-	-	-	0	0	-	0	-	-	-	-	-	-	-	-	-
Period 5e Period-Dependent Costs																					
5e.4.1	Insurance	-	-	-	-	-	-	139	14	152	-	152	-	-	-	-	-	-	-	-	-
5e.4.2	Property taxes	-	-	-	-	-	-	2	0	2	-	2	-	-	-	-	-	-	-	-	-
5e.4.3	Heavy equipment rental	-	192	-	-	-	-	-	29	221	-	221	-	-	-	-	-	-	-	-	-
5e.4.4	Plant energy budget	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5e.4.5	NRC ISFSI Fees	-	-	-	-	-	-	58	-	58	-	58	-	-	-	-	-	-	-	-	-
5e.4.6	Site O&M	-	-	-	-	-	-	69	10	79	-	79	-	-	-	-	-	-	-	-	-
5e.4.7	Corporate A&G	-	-	-	-	-	-	130	19	149	-	149	-	-	-	-	-	-	-	-	-
5e.4.8	Security Staff Cost	-	-	-	-	-	-	86	13	99	-	99	-	-	-	-	-	-	-	-	5,013
5e.4.9	Utility Staff Cost	-	-	-	-	-	-	252	38	290	-	290	-	-	-	-	-	-	-	-	3,803
5e.4	Subtotal Period 5e Period-Dependent Costs	-	192	-	-	-	-	736	123	1,051	-	1,051	-	-	-	-	-	-	-	-	8,816
5e.0	TOTAL PERIOD 5e COST	-	225	5	32	-	75	2,015	348	2,700	-	2,700	-	-	1,231	-	-	-	102,129	3,165	11,376
PERIOD 5f - ISFSI Site Restoration																					
Period 5f Direct Decommissioning Activities																					
Period 5f Additional Costs																					
5f.2.1	ISFSI Demolition and Site Restoration	-	1,298	-	-	-	-	78	206	1,582	-	1,582	-	-	-	-	-	-	-	17,348	160
5f.2	Subtotal Period 5f Additional Costs	-	1,298	-	-	-	-	78	206	1,582	-	1,582	-	-	-	-	-	-	-	17,348	160
Period 5f Collateral Costs																					
5f.3.1	Small tool allowance	-	13	-	-	-	-	-	2	15	-	15	-	-	-	-	-	-	-	-	-
5f.3	Subtotal Period 5f Collateral Costs	-	13	-	-	-	-	-	2	15	-	15	-	-	-	-	-	-	-	-	-
Period 5f Period-Dependent Costs																					
5f.4.1	Insurance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5f.4.2	Property taxes	-	-	-	-	-	-	1	0	1	-	1	-	-	-	-	-	-	-	-	-
5f.4.3	Heavy equipment rental	-	74	-	-	-	-	-	11	86	-	86	-	-	-	-	-	-	-	-	-
5f.4.4	Plant energy budget	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5f.4.5	Site O&M	-	-	-	-	-	-	34	5	39	-	39	-	-	-	-	-	-	-	-	-
5f.4.6	Security Staff Cost	-	-	-	-	-	-	43	6	49	-	49	-	-	-	-	-	-	-	-	2,486
5f.4.7	Utility Staff Cost	-	-	-	-	-	-	105	16	120	-	120	-	-	-	-	-	-	-	-	1,543
5f.4	Subtotal Period 5f Period-Dependent Costs	-	74	-	-	-	-	183	39	296	-	296	-	-	-	-	-	-	-	-	4,029
5f.0	TOTAL PERIOD 5f COST	-	1,385	-	-	-	-	261	247	1,893	-	1,893	-	-	-	-	-	-	-	17,348	4,189
PERIOD 5 TOTALS		-	25,139	505	345	-	5,001	65,714	13,734	110,437	6,425	59,691	44,322	-	1,231	-	-	1,785	450,069	222,122	922,797
TOTAL COST TO DECOMMISSION		**12,076**	**80,162**	**14,614**	**15,744**	**27,261**	**33,250**	**811,758**	**164,895**	**1,159,759**	**610,278**	**502,979**	**46,502**	**409,099**	**257,515**	**1,377**	**230**	**1,785**	**38,899,390**	**992,185**	**9,502,478**

Table C-2
Vermont Yankee Nuclear Power Station
Scenario 2: 2012 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours

TOTAL COST TO DECOMMISSION WITH 16.57% CONTINGENCY:	$1,159,759	thousands of 2011 dollars
TOTAL NRC LICENSE TERMINATION COST IS 52.62% OR:	$610,278	thousands of 2011 dollars
SPENT FUEL MANAGEMENT COST IS 43.37% OR:	$502,979	thousands of 2011 dollars
NON-NUCLEAR DEMOLITION COST IS 4.01% OR:	$46,502	thousands of 2011 dollars
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC)	259,121	cubic feet
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED	1,785	cubic feet
TOTAL SCRAP METAL REMOVED:	19,091	tons
TOTAL CRAFT LABOR REQUIREMENTS:	992,185	man-hours

End Notes:
n/a - indicates that this activity not charged as decommissioning expense.
a - indicates that this activity performed by decommissioning staff.
0 - indicates that this value is less than 0.5 but is non-zero.
a cell containing " - " indicates a zero value

APPENDIX D

DETAILED COST ANALYSES

2032 SHUTDOWN SCENARIOS, DECON ALTERNATIVE

Table D-1, Scenario 3 ..... D-2
Table D-2, Scenario 4 ..... D-15

Table D-1
Vermont Yankee Nuclear Power Station
Scenario 3: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a.1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
1a.1.2	Notification of Cessation of Operations									a											
1a.1.3	Remove fuel & source material									n/a											
1a.1.4	Notification of Permanent Defueling									a											
1a.1.5	Deactivate plant systems & process waste									a											
1a.1.6	Prepare and submit PSDAR	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1a.1.7	Review plant dwgs & specs.	-	-	-	-	-	-	538	81	619	619	-	-	-	-	-	-	-	-	-	4,600
1a.1.8	Perform detailed rad survey									a											
1a.1.9	Estimate by-product inventory	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.10	End product description	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.11	Detailed by-product inventory	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
1a.1.12	Define major work sequence	-	-	-	-	-	-	878	132	1,010	1,010	-	-	-	-	-	-	-	-	-	7,500
1a.1.13	Perform SER and EA	-	-	-	-	-	-	363	54	417	417	-	-	-	-	-	-	-	-	-	3,100
1a.1.14	Perform Site-Specific Cost Study	-	-	-	-	-	-	585	88	673	673	-	-	-	-	-	-	-	-	-	5,000
1a.1.15	Prepare/submit License Termination Plan	-	-	-	-	-	-	479	72	551	551	-	-	-	-	-	-	-	-	-	4,096
1a.1.16	Receive NRC approval of termination plan									a											
Activity Specifications																					
1a.1.17.1	Plant & temporary facilities	-	-	-	-	-	-	576	86	662	596	-	66	-	-	-	-	-	-	-	4,920
1a.1.17.2	Plant systems	-	-	-	-	-	-	488	73	561	505	-	56	-	-	-	-	-	-	-	4,167
1a.1.17.3	NSSS Decontamination Flush	-	-	-	-	-	-	59	9	67	67	-	-	-	-	-	-	-	-	-	500
1a.1.17.4	Reactor internals	-	-	-	-	-	-	831	125	956	956	-	-	-	-	-	-	-	-	-	7,100
1a.1.17.5	Reactor vessel	-	-	-	-	-	-	761	114	875	875	-	-	-	-	-	-	-	-	-	6,500
1a.1.17.6	Sacrificial shield	-	-	-	-	-	-	59	9	67	67	-	-	-	-	-	-	-	-	-	500
1a.1.17.7	Moisture separators/reheaters	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.17.8	Reinforced concrete	-	-	-	-	-	-	187	28	215	108	-	108	-	-	-	-	-	-	-	1,600
1a.1.17.9	Main Turbine	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
1a.1.17.10	Main Condensers	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
1a.1.17.11	Pressure suppression structure	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1a.1.17.12	Drywell	-	-	-	-	-	-	187	28	215	215	-	-	-	-	-	-	-	-	-	1,600
1a.1.17.13	Plant structures & buildings	-	-	-	-	-	-	365	55	420	210	-	210	-	-	-	-	-	-	-	3,120
1a.1.17.14	Waste management	-	-	-	-	-	-	538	81	619	619	-	-	-	-	-	-	-	-	-	4,600
1a.1.17.15	Facility & site closeout	-	-	-	-	-	-	105	16	121	61	-	61	-	-	-	-	-	-	-	900
1a.1.17	Total	-	-	-	-	-	-	4,996	749	5,745	5,245	-	501	-	-	-	-	-	-	-	42,683
Planning & Site Preparations																					
1a.1.18	Prepare dismantling sequence	-	-	-	-	-	-	281	42	323	323	-	-	-	-	-	-	-	-	-	2,400
1a.1.19	Plant prep. & temp. svces	-	-	-	-	-	-	2,800	420	3,220	3,220	-	-	-	-	-	-	-	-	-	-
1a.1.20	Design water clean-up system	-	-	-	-	-	-	164	25	188	188	-	-	-	-	-	-	-	-	-	1,400
1a.1.21	Rigging/Cont. Cntrl Envlps/tooling/etc.	-	-	-	-	-	-	2,200	330	2,530	2,530	-	-	-	-	-	-	-	-	-	-
1a.1.22	Procure casks/liners & containers	-	-	-	-	-	-	144	22	166	166	-	-	-	-	-	-	-	-	-	1,230
1a.1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	14,201	2,130	16,331	15,831	-	501	-	-	-	-	-	-	-	78,609
Period 1a Additional Costs																					
1a.2.1	Site Characterization	-	-	-	-	-	-	3,706	1,112	4,818	4,818	-	-	-	-	-	-	-	-	-	-
1a.2	Subtotal Period 1a Additional Costs	-	-	-	-	-	-	3,706	1,112	4,818	4,818	-	-	-	-	-	-	-	-	-	-
Period 1a Collateral Costs																					
1a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	9,421	1,413	10,835	-	10,835	-	-	-	-	-	-	-	-	-
1a.3	Subtotal Period 1a Collateral Costs	-	-	-	-	-	-	9,421	1,413	10,835	-	10,835	-	-	-	-	-	-	-	-	-
Period 1a Period-Dependent Costs																					
1a.4.1	Insurance	-	-	-	-	-	-	857	86	943	943	-	-	-	-	-	-	-	-	-	-
1a.4.2	Property taxes	-	-	-	-	-	-	7	1	7	7	-	-	-	-	-	-	-	-	-	-
1a.4.3	Health physics supplies	-	347	-	-	-	-	-	87	433	433	-	-	-	-	-	-	-	-	-	-
1a.4.4	Heavy equipment rental	-	338	-	-	-	-	-	51	389	389	-	-	-	-	-	-	-	-	-	-
1a.4.5	Disposal of DAW generated	-	-	11	10	-	45	-	14	79	79	-	-	-	610	-	-	-	12,190	20	-

Table D-1
Vermont Yankee Nuclear Power Station
Scenario 3: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 1a Period-Dependent Costs (continued)																					
1a.4.6	Plant energy budget	-	-	-	-	-	-	1,173	176	1,349	1,349	-	-	-	-	-	-	-	-	-	-
1a.4.7	NRC Fees	-	-	-	-	-	-	1,036	104	1,140	1,140	-	-	-	-	-	-	-	-	-	-
1a.4.8	Emergency Planning Fees	-	-	-	-	-	-	4,660	466	5,126	-	5,126	-	-	-	-	-	-	-	-	-
1a.4.9	Site O&M	-	-	-	-	-	-	208	31	239	239	-	-	-	-	-	-	-	-	-	-
1a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	763	114	878	-	878	-	-	-	-	-	-	-	-	-
1a.4.11	ISFSI Operating Costs	-	-	-	-	-	-	89	13	103	-	103	-	-	-	-	-	-	-	-	-
1a.4.12	Corporate A&G	-	-	-	-	-	-	8,708	1,306	10,014	10,014	-	-	-	-	-	-	-	-	-	-
1a.4.13	Security Staff Cost	-	-	-	-	-	-	5,356	803	6,159	6,159	-	-	-	-	-	-	-	-	-	157,471
1a.4.14	Utility Staff Cost	-	-	-	-	-	-	24,094	3,614	27,708	27,708	-	-	-	-	-	-	-	-	-	423,400
1a.4	Subtotal Period 1a Period-Dependent Costs	-	685	11	10	-	45	46,950	6,866	54,567	48,461	6,106	-	-	610	-	-	-	12,190	20	580,871
1a.0	TOTAL PERIOD 1a COST	-	685	11	10	-	45	74,279	11,521	86,551	69,110	16,941	501	-	610	-	-	-	12,190	20	659,480
PERIOD 1b - Decommissioning Preparations																					
Period 1b Direct Decommissioning Activities																					
Detailed Work Procedures																					
1b.1.1.1	Plant systems	-	-	-	-	-	-	554	83	637	573	-	64	-	-	-	-	-	-	-	4,733
1b.1.1.2	NSSS Decontamination Flush	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.3	Reactor internals	-	-	-	-	-	-	468	70	538	538	-	-	-	-	-	-	-	-	-	4,000
1b.1.1.4	Remaining buildings	-	-	-	-	-	-	158	24	182	45	-	136	-	-	-	-	-	-	-	1,350
1b.1.1.5	CRD housings & NIs	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.6	Incore instrumentation	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.7	Removal primary containment	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1b.1.1.8	Reactor vessel	-	-	-	-	-	-	425	64	489	489	-	-	-	-	-	-	-	-	-	3,630
1b.1.1.9	Facility closeout	-	-	-	-	-	-	140	21	162	81	-	81	-	-	-	-	-	-	-	1,200
1b.1.1.10	Sacrificial shield	-	-	-	-	-	-	140	21	162	162	-	-	-	-	-	-	-	-	-	1,200
1b.1.1.11	Reinforced concrete	-	-	-	-	-	-	117	18	135	67	-	67	-	-	-	-	-	-	-	1,000
1b.1.1.12	Main Turbine	-	-	-	-	-	-	243	37	280	280	-	-	-	-	-	-	-	-	-	2,080
1b.1.1.13	Main Condensers	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
1b.1.1.14	Moisture separators & reheaters	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1b.1.1.15	Radwaste building	-	-	-	-	-	-	320	48	367	331	-	37	-	-	-	-	-	-	-	2,730
1b.1.1.16	Reactor building	-	-	-	-	-	-	320	48	367	331	-	37	-	-	-	-	-	-	-	2,730
1b.1.1	Total	-	-	-	-	-	-	3,949	592	4,542	4,120	-	422	-	-	-	-	-	-	-	33,741
1b.1.2	Decon NSSS	522	-	-	-	-	-	-	261	783	783	-	-	-	-	-	-	-	-	1,067	-
1b.1	Subtotal Period 1b Activity Costs	522	-	-	-	-	-	3,949	854	5,325	4,904	-	422	-	-	-	-	-	-	1,067	33,741
Period 1b Additional Costs																					
1b.2.1	Spent Fuel Pool Isolation	-	-	-	-	-	-	10,280	1,542	11,822	11,822	-	-	-	-	-	-	-	-	-	-
1b.2.2	Asbestos Remediation	-	1,644	30	177	-	602	67	601	3,121	3,121	-	-	-	9,938	-	-	-	129,188	13,287	-
1b.2.3	Operational Waste	406	-	139	1,052	-	1,045	-	636	3,277	3,277	-	-	-	2,600	-	-	-	156,000	507	-
1b.2.4	Hazardous Waste	-	-	197	95	1,692	-	-	288	2,271	2,271	-	-	3,288	-	-	-	-	354,266	1,619	-
1b.2	Subtotal Period 1b Additional Costs	406	1,644	366	1,323	1,692	1,647	10,347	3,067	20,491	20,491	-	-	3,288	12,538	-	-	-	639,454	15,413	-
Period 1b Collateral Costs																					
1b.3.1	Decon equipment	667	-	-	-	-	-	-	100	767	767	-	-	-	-	-	-	-	-	-	-
1b.3.2	DOC staff relocation expenses	-	-	-	-	-	-	1,030	154	1,184	1,184	-	-	-	-	-	-	-	-	-	-
1b.3.3	Process decommissioning water waste	53	-	18	135	-	134	-	82	421	421	-	-	-	333	-	-	-	20,004	65	-
1b.3.4	Process decommissioning chemical flush waste	2	-	44	404	-	860	-	281	1,591	1,591	-	-	-	-	859	-	-	91,583	161	-
1b.3.5	Small tool allowance	-	21	-	-	-	-	-	3	24	24	-	-	-	-	-	-	-	-	-	-
1b.3.6	Pipe cutting equipment	-	1,100	-	-	-	-	-	165	1,265	1,265	-	-	-	-	-	-	-	-	-	-
1b.3.7	Decon rig	1,500	-	-	-	-	-	-	225	1,725	1,725	-	-	-	-	-	-	-	-	-	-
1b.3.8	Spent Fuel Capital and Transfer	-	-	-	-	-	-	7,293	1,094	8,387	-	8,387	-	-	-	-	-	-	-	-	-
1b.3	Subtotal Period 1b Collateral Costs	2,221	1,121	62	539	-	994	8,323	2,104	15,364	6,977	8,387	-	-	333	859	-	-	111,587	226	-
Period 1b Period-Dependent Costs																					
1b.4.1	Decon supplies	21	-	-	-	-	-	-	5	26	26	-	-	-	-	-	-	-	-	-	-
1b.4.2	Insurance	-	-	-	-	-	-	212	21	233	233	-	-	-	-	-	-	-	-	-	-

Table D-1
Vermont Yankee Nuclear Power Station
Scenario 3: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 1b Period-Dependent Costs (continued)																					
1b.4.3	Property taxes	-	-	-	-	-	-	3	0	4	4	-	-	-	-	-	-	-	-	-	-
1b.4.4	Health physics supplies	-	247	-	-	-	-	-	62	308	308	-	-	-	-	-	-	-	-	-	-
1b.4.5	Heavy equipment rental	-	172	-	-	-	-	-	26	197	197	-	-	-	-	-	-	-	-	-	-
1b.4.6	Disposal of DAW generated	-	-	6	6	-	27	-	8	47	47	-	-	-	362	-	-	-	7,234	12	-
1b.4.7	Plant energy budget	-	-	-	-	-	-	1,189	178	1,367	1,367	-	-	-	-	-	-	-	-	-	-
1b.4.8	NRC Fees	-	-	-	-	-	-	294	29	324	324	-	-	-	-	-	-	-	-	-	-
1b.4.9	Emergency Planning Fees	-	-	-	-	-	-	2,076	208	2,283	-	2,283	-	-	-	-	-	-	-	-	-
1b.4.10	Site O&M	-	-	-	-	-	-	105	16	121	121	-	-	-	-	-	-	-	-	-	-
1b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	387	58	445	-	445	-	-	-	-	-	-	-	-	-
1b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	45	7	52	-	52	-	-	-	-	-	-	-	-	-
1b.4.13	Corporate A&G	-	-	-	-	-	-	2,192	329	2,521	2,521	-	-	-	-	-	-	-	-	-	-
1b.4.14	Security Staff Cost	-	-	-	-	-	-	2,714	407	3,122	3,122	-	-	-	-	-	-	-	-	-	79,814
1b.4.15	DOC Staff Cost	-	-	-	-	-	-	5,561	834	6,395	6,395	-	-	-	-	-	-	-	-	-	64,486
1b.4.16	Utility Staff Cost	-	-	-	-	-	-	12,280	1,842	14,122	14,122	-	-	-	-	-	-	-	-	-	215,657
1b.4	Subtotal Period 1b Period-Dependent Costs	21	418	6	6	-	27	27,060	4,030	31,568	28,788	2,780	-	-	362	-	-	-	7,234	12	359,957
1b.0	TOTAL PERIOD 1b COST	3,170	3,184	434	1,868	1,692	2,668	49,678	10,055	72,749	61,160	11,168	422	3,288	13,233	859	-	-	758,275	16,717	393,698
PERIOD 1 TOTALS		3,170	3,869	444	1,878	1,692	2,713	123,958	21,576	159,300	130,270	28,108	922	3,288	13,843	859	-	-	770,466	16,737	1,053,178
PERIOD 2a - Large Component Removal																					
Period 2a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
2a.1.1.1	Recirculation System Piping & Valves	99	75	20	48	-	370	-	170	782	782	-	-	-	1,216	-	-	-	139,051	3,141	-
2a.1.1.2	Recirculation Pumps & Motors	37	39	13	57	15	268	-	108	537	537	-	-	181	1,788	-	-	-	111,100	1,476	-
2a.1.1.3	CRDMs & NIs Removal	88	80	234	110	-	178	-	148	838	838	-	-	-	2,561	-	-	-	67,063	3,032	-
2a.1.1.4	Reactor Vessel Internals	110	3,004	9,070	2,467	-	15,346	313	12,912	43,221	43,221	-	-	-	501	1,247	918	-	268,455	35,533	1,553
2a.1.1.5	Reactor Vessel	60	6,665	2,064	1,403	-	3,052	313	7,468	21,024	21,024	-	-	-	12,171	-	-	-	1,287,001	35,533	1,553
2a.1.1	Totals	393	9,863	11,401	4,084	15	19,214	626	20,805	66,402	66,402	-	-	181	18,237	1,247	918	-	1,872,670	78,715	3,107
Removal of Major Equipment																					
2a.1.2	Main Turbine/Generator	-	233	1,128	579	4,133	449	-	990	7,512	7,512	-	-	63,343	1,984	-	-	-	3,019,086	4,185	-
2a.1.3	Main Condensers	-	505	633	325	2,320	252	-	649	4,684	4,684	-	-	35,551	1,114	-	-	-	1,694,457	8,942	-
Cascading Costs from Clean Building Demolition																					
2a.1.4.1	Reactor	-	701	-	-	-	-	-	105	806	806	-	-	-	-	-	-	-	-	8,238	-
2a.1.4.2	AOG	-	85	-	-	-	-	-	13	98	98	-	-	-	-	-	-	-	-	1,032	-
2a.1.4.3	Equipment Lock	-	4	-	-	-	-	-	1	5	5	-	-	-	-	-	-	-	-	55	-
2a.1.4.4	Misc Cont Yard Structures	-	9	-	-	-	-	-	1	10	10	-	-	-	-	-	-	-	-	114	-
2a.1.4.5	North Warehouse	-	1	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	16	-
2a.1.4.6	Radwaste	-	26	-	-	-	-	-	4	30	30	-	-	-	-	-	-	-	-	318	-
2a.1.4.7	Radwaste Compactor	-	0	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	4	-
2a.1.4.8	Turbine	-	237	-	-	-	-	-	36	273	273	-	-	-	-	-	-	-	-	2,999	-
2a.1.4.9	Vent Stack	-	0	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	5	-
2a.1.4	Totals	-	1,064	-	-	-	-	-	160	1,223	1,223	-	-	-	-	-	-	-	-	12,780	-
Reactor Building System Components																					
2a.1.5.1	RX-BLD-213-2_2	-	142	11	24	54	124	-	79	434	434	-	-	912	550	-	-	-	83,762	2,665	-
2a.1.5.2	RX-BLD-213-3_2	-	125	7	16	37	80	-	60	324	324	-	-	631	352	-	-	-	55,529	2,359	-
2a.1.5.3	RX-BLD-213-4_2	-	131	5	11	22	57	-	53	279	279	-	-	379	252	-	-	-	36,830	2,470	-
2a.1.5.4	RX-BLD-213-5_2	-	233	16	46	208	144	-	134	780	780	-	-	3,531	637	-	-	-	197,501	4,355	-
2a.1.5.5	RX-BLD-232-2_2	-	118	13	27	63	140	-	79	439	439	-	-	1,064	618	-	-	-	95,755	2,216	-
2a.1.5.6	RX-BLD-232-3_2	-	106	12	26	58	135	-	74	411	411	-	-	984	595	-	-	-	90,537	2,010	-
2a.1.5.7	RX-BLD-232-4_2	-	52	2	4	7	21	-	20	106	106	-	-	125	91	-	-	-	12,832	958	-
2a.1.5.8	RX-BLD-232-5_2	-	58	4	7	15	40	-	28	151	151	-	-	246	178	-	-	-	25,094	1,057	-
2a.1.5.9	RX-BLD-252-10_2	-	9	0	0	2	1	-	3	15	15	-	-	33	2	-	-	-	1,563	170	-
2a.1.5.10	RX-BLD-252-1_2	-	7	0	0	1	0	-	2	10	10	-	-	25	1	-	-	-	1,094	119	-
2a.1.5.11	RX-BLD-252-1_3	-	3	0	0	-	1	-	1	5	5	-	-	-	5	-	-	-	427	52	-

Table D-1
Vermont Yankee Nuclear Power Station
Scenario 3: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Reactor Building System Components (continued)																					
2a.1.5.12	RX-BLD-252-2_2	-	35	4	8	19	44	-	24	135	135	-	-	325	195	-	-	-	29,761	654	-
2a.1.5.13	RX-BLD-252-3_2	-	44	2	4	9	18	-	18	94	94	-	-	158	79	-	-	-	13,183	825	-
2a.1.5.14	RX-BLD-252-3_3	-	2	0	0	-	2	-	1	6	6	-	-	-	10	-	-	-	863	40	-
2a.1.5.15	RX-BLD-252-4_2	-	92	6	17	82	49	-	51	297	297	-	-	1,391	218	-	-	-	75,008	1,742	-
2a.1.5.16	RX-BLD-252-4_3	-	1	0	0	-	1	-	0	2	2	-	-	-	3	-	-	-	234	14	-
2a.1.5.17	RX-BLD-252-5_2	-	229	9	26	126	73	-	99	561	561	-	-	2,139	323	-	-	-	114,332	4,221	-
2a.1.5.18	RX-BLD-252-5_3	-	103	11	13	-	97	-	53	277	277	-	-	-	427	-	-	-	36,281	1,647	-
2a.1.5.19	RX-BLD-252-6_2	-	191	6	19	98	47	-	77	437	437	-	-	1,662	207	-	-	-	85,059	3,505	-
2a.1.5.20	RX-BLD-252-6_3	-	106	12	14	-	104	-	56	292	292	-	-	-	459	-	-	-	39,016	1,712	-
2a.1.5.21	RX-BLD-252-7_2	-	172	3	10	54	21	-	58	318	318	-	-	919	95	-	-	-	45,374	3,168	-
2a.1.5.22	RX-BLD-252-8_2	-	52	1	4	24	7	-	19	107	107	-	-	404	32	-	-	-	19,107	956	-
2a.1.5.23	RX-BLD-252-9_2	-	86	3	7	17	33	-	34	179	179	-	-	296	144	-	-	-	24,288	1,584	-
2a.1.5.24	RX-BLD-252-9_3	-	19	2	4	-	27	-	12	65	65	-	-	-	121	-	-	-	10,281	339	-
2a.1.5	Totals	-	2,116	129	285	897	1,265	-	1,035	5,727	5,727	-	-	15,225	5,595	-	-	-	1,093,710	38,837	-
Turbine Building System Components																					
2a.1.6.1	TURB-BLD-222-10_2	-	102	2	7	35	17	-	36	200	200	-	-	594	78	-	-	-	30,572	1,948	-
2a.1.6.2	TURB-BLD-222-11_2	-	60	1	4	18	13	-	22	118	118	-	-	313	58	-	-	-	17,682	1,117	-
2a.1.6.3	TURB-BLD-222-1_2	-	388	28	74	294	274	-	224	1,283	1,283	-	-	4,998	1,211	-	-	-	305,900	7,261	-
2a.1.6.4	TURB-BLD-222-2_2	-	302	32	85	345	305	-	219	1,287	1,287	-	-	5,861	1,347	-	-	-	352,511	5,632	-
2a.1.6.5	TURB-BLD-222-3_2	-	86	7	20	94	61	-	54	322	322	-	-	1,603	268	-	-	-	87,868	1,589	-
2a.1.6.6	TURB-BLD-222-8_2	-	248	8	20	72	80	-	97	525	525	-	-	1,229	353	-	-	-	79,944	4,695	-
2a.1.6.7	TURB-BLD-222-9_2	-	141	23	79	446	170	-	159	1,019	1,019	-	-	7,572	754	-	-	-	371,531	2,660	-
2a.1.6.8	TURB-BLD-228-12_2	-	200	5	14	53	55	-	74	402	402	-	-	906	242	-	-	-	57,336	3,712	-
2a.1.6.9	TURB-BLD-228-13_2	-	130	2	7	29	22	-	43	232	232	-	-	489	95	-	-	-	27,956	2,435	-
2a.1.6.10	TURB-BLD-228-1_2	-	124	6	16	67	53	-	57	324	324	-	-	1,146	240	-	-	-	66,617	2,290	-
2a.1.6.11	TURB-BLD-228-2_2	-	365	32	103	553	248	-	255	1,557	1,557	-	-	9,398	1,098	-	-	-	475,005	6,873	-
2a.1.6.12	TURB-BLD-228-3_2	-	310	24	61	194	266	-	185	1,039	1,039	-	-	3,295	1,178	-	-	-	233,901	5,829	-
2a.1.6.13	TURB-BLD-228-4_2	-	345	27	70	229	302	-	209	1,182	1,182	-	-	3,890	1,335	-	-	-	271,442	6,460	-
2a.1.6.14	TURB-BLD-228-5_2	-	163	17	42	120	196	-	116	653	653	-	-	2,037	866	-	-	-	156,261	3,032	-
2a.1.6.15	TURB-BLD-228-6_2	-	135	15	36	95	177	-	99	558	558	-	-	1,619	783	-	-	-	132,232	2,519	-
2a.1.6	Totals	-	3,099	230	637	2,647	2,238	-	1,850	10,700	10,700	-	-	44,949	9,905	-	-	-	2,666,759	58,053	-
Augmented Offgas Building System Components																					
2a.1.7.1	AOG-BLD-FL1-1_2	-	33	1	3	13	9	-	13	72	72	-	-	220	40	-	-	-	12,302	610	-
2a.1.7.2	AOG-BLD-FL1-2_2	-	100	4	14	93	18	-	46	274	274	-	-	1,577	91	-	-	-	70,749	1,850	-
2a.1.7.3	AOG-BLD-FL1-3_2	-	100	7	17	57	73	-	55	310	310	-	-	971	324	-	-	-	66,961	1,829	-
2a.1.7.4	AOG-BLD-FL1-4_2	-	106	6	14	46	58	-	51	280	280	-	-	783	258	-	-	-	53,731	1,909	-
2a.1.7.5	AOG-BLD-FL1-5_2	-	98	2	7	46	8	-	35	195	195	-	-	784	36	-	-	-	34,824	1,798	-
2a.1.7.6	AOG-BLD-FL2-1_2	-	65	5	11	37	45	-	35	197	197	-	-	622	199	-	-	-	42,146	1,194	-
2a.1.7.7	AOG-BLD-FL2-2_2	-	7	0	1	2	3	-	3	16	16	-	-	34	11	-	-	-	2,344	134	-
2a.1.7.8	AOG-BLD-FL2-3_2	-	7	0	1	2	2	-	3	15	15	-	-	33	11	-	-	-	2,242	129	-
2a.1.7.9	AOG-BLD-FL2-4_2	-	55	4	10	36	44	-	32	182	182	-	-	606	194	-	-	-	41,088	1,020	-
2a.1.7.10	AOG-BLD-FL2-5_2	-	7	0	0	1	2	-	2	13	13	-	-	15	8	-	-	-	1,293	133	-
2a.1.7.11	AOG-BLD-FL2-6_2	-	6	0	1	2	2	-	3	14	14	-	-	33	11	-	-	-	2,242	114	-
2a.1.7.12	AOG-BLD-FL2-7_2	-	30	1	2	6	9	-	11	59	59	-	-	106	38	-	-	-	7,531	541	-
2a.1.7.13	AOG-BLD-FL2-8_2	-	15	0	1	4	3	-	5	29	29	-	-	73	15	-	-	-	4,279	264	-
2a.1.7.14	AOG-BLD-FL2-9_2	-	95	5	15	84	36	-	48	283	283	-	-	1,423	164	-	-	-	71,186	1,724	-
2a.1.7.15	AOG-BLDG-1_2	-	48	3	5	9	31	-	22	118	118	-	-	158	136	-	-	-	17,994	865	-
2a.1.7.16	AOG-BLDG-2_2	-	168	2	3	4	21	-	48	246	246	-	-	74	98	-	-	-	10,723	2,485	-
2a.1.7.17	AOG-BLDG-PENT_2	-	34	1	3	18	8	-	14	78	78	-	-	314	34	-	-	-	15,642	607	-
2a.1.7.18	AOG-BLDG-RF_2	-	73	4	13	64	35	-	39	228	228	-	-	1,087	155	-	-	-	57,302	1,298	-
2a.1.7	Totals	-	1,047	46	121	525	406	-	465	2,609	2,609	-	-	8,914	1,824	-	-	-	514,582	18,504	-
2a.1.8	Scaffolding in support of decommissioning	-	593	25	13	86	9	-	168	894	894	-	-	1,312	146	-	-	-	65,595	11,723	-
2a.1	Subtotal Period 2a Activity Costs	393	18,519	13,593	6,045	10,621	23,832	626	26,122	99,750	99,750	-	-	169,475	38,805	1,247	918	-	10,926,860	231,741	3,107
Period 2a Additional Costs																					
2a.2.1	Retired Low Presure Turbine Rotors	-	-	31	19	1,868	-	-	286	2,204	2,204	-	-	2,723	-	-	-	-	1,334,256	640	-

Table D-1
Vermont Yankee Nuclear Power Station
Scenario 3: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
2a.2	Subtotal Period 2a Additional Costs	-	-	31	19	1,868	-	-	286	2,204	2,204	-	-	2,723	-	-	-	-	1,334,256	640	-
Period 2a Collateral Costs																					
2a.3.1	Process decommissioning water waste	96	-	33	250	-	248	-	151	778	778	-	-	-	617	-	-	-	37,048	120	-
2a.3.3	Small tool allowance	-	170	-	-	-	-	-	25	195	176	-	20	-	-	-	-	-	-	-	-
2a.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	21,032	3,155	24,187	-	24,187	-	-	-	-	-	-	-	-	-
2a.3	Subtotal Period 2a Collateral Costs	96	170	33	250	-	248	21,032	3,331	25,160	954	24,187	20	-	617	-	-	-	37,048	120	-
Period 2a Period-Dependent Costs																					
2a.4.1	Decon supplies	60	-	-	-	-	-	-	15	75	75	-	-	-	-	-	-	-	-	-	-
2a.4.2	Insurance	-	-	-	-	-	-	619	62	681	681	-	-	-	-	-	-	-	-	-	-
2a.4.3	Property taxes	-	-	-	-	-	-	10	1	11	10	-	1	-	-	-	-	-	-	-	-
2a.4.4	Health physics supplies	-	1,272	-	-	-	-	-	318	1,590	1,590	-	-	-	-	-	-	-	-	-	-
2a.4.5	Heavy equipment rental	-	2,183	-	-	-	-	-	327	2,511	2,511	-	-	-	-	-	-	-	-	-	-
2a.4.6	Disposal of DAW generated	-	-	74	69	-	317	-	97	556	556	-	-	-	4,266	-	-	-	85,330	139	-
2a.4.7	Plant energy budget	-	-	-	-	-	-	1,652	248	1,899	1,899	-	-	-	-	-	-	-	-	-	-
2a.4.8	NRC Fees	-	-	-	-	-	-	773	77	850	850	-	-	-	-	-	-	-	-	-	-
2a.4.9	Emergency Planning Fees	-	-	-	-	-	-	6,070	607	6,677	-	6,677	-	-	-	-	-	-	-	-	-
2a.4.10	Site O&M	-	-	-	-	-	-	308	46	354	354	-	-	-	-	-	-	-	-	-	-
2a.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	1,131	170	1,301	-	1,301	-	-	-	-	-	-	-	-	-
2a.4.12	ISFSI Operating Costs	-	-	-	-	-	-	133	20	152	-	152	-	-	-	-	-	-	-	-	-
2a.4.13	Corporate A&G	-	-	-	-	-	-	4,205	631	4,836	4,836	-	-	-	-	-	-	-	-	-	-
2a.4.14	Security Staff Cost	-	-	-	-	-	-	6,698	1,005	7,703	7,703	-	-	-	-	-	-	-	-	-	195,533
2a.4.15	DOC Staff Cost	-	-	-	-	-	-	20,184	3,028	23,212	23,212	-	-	-	-	-	-	-	-	-	234,949
2a.4.16	Utility Staff Cost	-	-	-	-	-	-	25,470	3,821	29,291	29,291	-	-	-	-	-	-	-	-	-	437,437
2a.4	Subtotal Period 2a Period-Dependent Costs	60	3,455	74	69	-	317	67,254	10,472	81,701	73,569	8,131	1	-	4,266	-	-	-	85,330	139	867,919
2a.0	TOTAL PERIOD 2a COST	549	22,144	13,730	6,382	12,489	24,397	88,912	40,211	208,815	176,477	32,317	21	172,198	43,689	1,247	918	-	12,383,490	232,640	871,025
PERIOD 2b - Site Decontamination																					
Period 2b Direct Decommissioning Activities																					
Reactor Building System Components																					
2b.1.1.1	RX-BLD-213-1_2	-	1,122	49	179	1,050	349	-	557	3,306	3,306	-	-	17,830	1,544	-	-	-	855,276	22,426	-
2b.1.1.2	RX-BLD-213-1_3	-	53	7	12	-	90	-	38	201	201	-	-	-	397	-	-	-	33,774	988	-
2b.1.1.3	RX-BLD-232-1_2	-	489	54	120	277	626	-	344	1,910	1,910	-	-	4,704	2,767	-	-	-	426,247	9,019	-
2b.1.1.4	RX-BLD-232-1_3	-	23	2	3	-	23	-	12	64	64	-	-	-	103	-	-	-	8,738	393	-
2b.1.1.5	RX-BLD-280-1_2	-	26	0	1	7	2	-	8	46	46	-	-	126	9	-	-	-	5,893	496	-
2b.1.1.6	RX-BLD-280-1_3	-	57	4	7	-	53	-	29	151	151	-	-	-	234	-	-	-	19,900	1,076	-
2b.1.1.7	RX-BLD-280-2_2	-	41	1	3	5	15	-	15	81	81	-	-	89	68	-	-	-	9,426	776	-
2b.1.1.8	RX-BLD-280-2_3	-	115	13	24	-	177	-	78	408	408	-	-	-	785	-	-	-	66,718	2,197	-
2b.1.1.9	RX-BLD-280-3_2	-	191	12	38	195	100	-	109	646	646	-	-	3,316	444	-	-	-	172,355	3,486	-
2b.1.1.10	RX-BLD-280-4_2	-	79	2	6	33	16	-	30	167	167	-	-	562	71	-	-	-	28,869	1,435	-
2b.1.1.11	RX-BLD-280-5_2	-	161	4	12	60	35	-	60	332	332	-	-	1,018	154	-	-	-	54,392	2,951	-
2b.1.1.12	RX-BLD-280-6_2	-	175	3	12	67	25	-	62	344	344	-	-	1,133	109	-	-	-	55,300	3,223	-
2b.1.1.13	RX-BLD-280-7_2	-	142	6	22	131	39	-	69	409	409	-	-	2,221	172	-	-	-	104,792	2,596	-
2b.1.1.14	RX-BLD-280-ROOF_2	-	26	6	14	72	38	-	29	184	184	-	-	1,216	166	-	-	-	63,490	489	-
2b.1.1.15	RX-BLD-303-1_2	-	46	2	4	12	18	-	18	100	100	-	-	201	80	-	-	-	14,964	875	-
2b.1.1.16	RX-BLD-303-1_3	-	156	25	40	-	295	-	121	638	638	-	-	-	1,307	-	-	-	111,075	2,933	-
2b.1.1.17	RX-BLD-303-2_3	-	82	7	10	-	72	-	41	211	211	-	-	-	381	-	-	-	26,893	1,552	-
2b.1.1.18	RX-BLD-303-3_3	-	23	1	1	-	10	-	9	45	45	-	-	-	45	-	-	-	3,831	442	-
2b.1.1.19	RX-BLD-303-4_2	-	191	12	32	138	111	-	102	588	588	-	-	2,347	492	-	-	-	137,091	3,461	-
2b.1.1.20	RX-BLD-303-5_2	-	20	0	1	6	3	-	7	36	36	-	-	95	11	-	-	-	4,799	376	-
2b.1.1.21	RX-BLD-303-6_2	-	11	0	0	3	1	-	4	19	19	-	-	46	5	-	-	-	2,310	210	-
2b.1.1.22	RX-BLD-303-7_2	-	82	4	11	53	33	-	39	222	222	-	-	905	147	-	-	-	49,224	1,515	-
2b.1.1.23	RX-BLD-303-7_3	-	21	3	5	-	35	-	15	79	79	-	-	-	157	-	-	-	13,334	364	-
2b.1.1.24	RX-BLD-303-8_2	-	73	2	7	32	19	-	29	162	162	-	-	542	84	-	-	-	29,154	1,304	-
2b.1.1.25	RX-BLD-318-1_3	-	25	1	2	-	12	-	10	49	49	-	-	-	60	-	-	-	4,371	479	-
2b.1.1.26	RX-BLD-318-2_3	-	39	3	3	-	24	-	16	85	85	-	-	-	106	-	-	-	9,021	698	-
2b.1.1.27	RX-BLD-318-3_3	-	29	2	3	-	21	-	13	67	67	-	-	-	92	-	-	-	7,792	531	-

Table D-1
Vermont Yankee Nuclear Power Station
Scenario 3: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Reactor Building System Components (continued)																					
2b.1.1.28	RX-BLD-318-4_2	-	512	10	48	335	42	-	197	1,143	1,143	-	-	5,692	184	-	-	-	246,806	9,443	-
2b.1.1.29	RX-BLD-318-4_3	-	13	1	2	-	15	-	7	39	39	-	-	-	66	-	-	-	5,636	221	-
2b.1.1.30	RX-BLD-318-5_2	-	90	4	11	62	26	-	40	233	233	-	-	1,045	118	-	-	-	52,319	1,631	-
2b.1.1.31	RX-BLD-318-6_2	-	49	1	4	21	7	-	18	99	99	-	-	350	32	-	-	-	16,898	835	-
2b.1.1.32	RX-BLD-318-7_2	-	40	2	5	22	16	-	18	102	102	-	-	374	70	-	-	-	21,101	725	-
2b.1.1.33	RX-BLD-345-1_3	-	398	1	1	-	7	-	102	509	509	-	-	-	31	-	-	-	2,619	7,779	-
2b.1.1.34	RX-BLD-345-2_3	-	280	0	0	-	2	-	70	352	352	-	-	-	7	-	-	-	631	5,471	-
2b.1.1.35	RX-BLD-345-3_2	-	612	0	1	8	2	-	155	779	779	-	-	136	9	-	-	-	6,249	11,955	-
2b.1.1.36	RX-BLD-345-3_3	-	7	1	1	-	7	-	4	20	20	-	-	-	32	-	-	-	2,760	142	-
2b.1.1.37	RX-BLD-345-4_2	-	5	0	0	0	1	-	1	7	7	-	-	2	4	-	-	-	416	91	-
2b.1.1.38	RX-BLD-345-5_2	-	47	2	5	24	15	-	20	113	113	-	-	410	67	-	-	-	22,378	846	-
2b.1.1.39	RX-BLD-345-6_2	-	60	2	4	18	15	-	22	121	121	-	-	298	68	-	-	-	17,914	1,110	-
2b.1.1.40	RX-BLD-345-7_2	-	35	1	4	22	8	-	15	85	85	-	-	368	36	-	-	-	17,962	639	-
2b.1.1.41	RX-BLD-345-8_2	-	37	1	3	15	8	-	14	78	78	-	-	261	35	-	-	-	13,578	654	-
2b.1.1.42	RX-BLD-DW_2	-	317	13	29	75	145	-	133	713	713	-	-	1,281	643	-	-	-	106,657	6,017	-
2b.1.1.43	RX-BLD-DW_3	-	561	129	197	-	1,446	-	544	2,877	2,877	-	-	-	6,396	-	-	-	543,518	10,449	-
2b.1.1	Totals	-	6,562	395	890	2,742	4,004	-	3,226	17,819	17,819	-	-	46,568	17,789	-	-	-	3,396,472	124,301	-
Turbine Building System Components																					
2b.1.2.1	TURB-BLD-232-1_2	-	134	3	12	68	25	-	52	295	295	-	-	1,155	118	-	-	-	56,395	2,535	-
2b.1.2.2	TURB-BLD-232-2_2	-	238	10	23	87	88	-	99	545	545	-	-	1,475	390	-	-	-	93,005	4,392	-
2b.1.2.3	TURB-BLD-232-3_2	-	143	4	10	39	38	-	53	287	287	-	-	667	168	-	-	-	41,247	2,632	-
2b.1.2.4	TURB-BLD-232-4_2	-	112	4	7	26	31	-	41	221	221	-	-	438	138	-	-	-	29,531	2,046	-
2b.1.2.5	TURB-BLD-232-5_2	-	150	5	12	49	43	-	58	317	317	-	-	829	188	-	-	-	49,641	2,784	-
2b.1.2.6	TURB-BLD-232-6_2	-	174	4	11	49	36	-	62	335	335	-	-	825	158	-	-	-	46,921	3,210	-
2b.1.2.7	TURB-BLD-232-7_2	-	117	3	8	30	29	-	42	229	229	-	-	518	127	-	-	-	31,755	2,161	-
2b.1.2.8	TURB-BLD-246-1_2	-	130	9	23	87	92	-	73	415	415	-	-	1,478	407	-	-	-	94,622	2,440	-
2b.1.2.9	TURB-BLD-248-1_2	-	110	6	16	63	58	-	54	307	307	-	-	1,064	259	-	-	-	65,067	2,059	-
2b.1.2.10	TURB-BLD-248-2_2	-	246	1	6	42	7	-	71	374	374	-	-	714	33	-	-	-	31,819	4,744	-
2b.1.2.11	TURB-BLD-248-3_2	-	287	27	72	249	298	-	197	1,129	1,129	-	-	4,220	1,317	-	-	-	283,335	5,367	-
2b.1.2.12	TURB-BLD-248-4_2	-	198	22	56	180	248	-	149	855	855	-	-	3,062	1,099	-	-	-	217,723	3,718	-
2b.1.2.13	TURB-BLD-248-5_2	-	51	3	7	33	23	-	25	141	141	-	-	555	101	-	-	-	31,175	940	-
2b.1.2.14	TURB-BLD-248-6_2	-	115	4	12	64	30	-	48	273	273	-	-	1,094	134	-	-	-	55,778	2,121	-
2b.1.2.15	TURB-BLD-248-7_2	-	71	5	15	72	42	-	42	246	246	-	-	1,220	187	-	-	-	65,408	1,313	-
2b.1.2.16	TURB-BLD-252-10_2	-	141	3	8	41	24	-	49	266	266	-	-	694	108	-	-	-	37,406	2,663	-
2b.1.2.17	TURB-BLD-252-13_2	-	123	1	5	33	7	-	39	209	209	-	-	567	32	-	-	-	25,746	2,254	-
2b.1.2.18	TURB-BLD-252-14_2	-	91	3	7	28	25	-	34	187	187	-	-	468	109	-	-	-	28,329	1,680	-
2b.1.2.19	TURB-BLD-252-1_2	-	89	6	21	120	45	-	55	338	338	-	-	2,043	200	-	-	-	99,951	1,614	-
2b.1.2.20	TURB-BLD-252-2_2	-	87	6	21	117	45	-	54	331	331	-	-	1,995	200	-	-	-	98,015	1,589	-
2b.1.2.21	TURB-BLD-252-3_2	-	21	1	2	10	3	-	8	44	44	-	-	168	16	-	-	-	8,128	381	-
2b.1.2.22	TURB-BLD-252-4_2	-	26	0	1	5	1	-	8	40	40	-	-	78	3	-	-	-	3,408	504	-
2b.1.2.23	TURB-BLD-252-5_2	-	178	3	9	48	26	-	60	324	324	-	-	808	115	-	-	-	42,556	3,378	-
2b.1.2.24	TURB-BLD-252-6_2	-	63	0	1	5	2	-	17	88	88	-	-	77	11	-	-	-	4,015	1,202	-
2b.1.2.25	TURB-BLD-252-7_2	-	73	6	18	81	55	-	47	281	281	-	-	1,379	245	-	-	-	76,729	1,202	-
2b.1.2.26	TURB-BLD-252-8_2	-	25	1	2	11	7	-	10	56	56	-	-	185	30	-	-	-	10,050	423	-
2b.1.2.27	TURB-BLD-252-9_2	-	104	5	18	108	32	-	54	321	321	-	-	1,829	155	-	-	-	86,470	1,744	-
2b.1.2.28	TURB-BLD-272-1_2	-	27	2	6	39	11	-	16	101	101	-	-	660	48	-	-	-	30,908	505	-
2b.1.2.29	TURB-BLD-272-3_2	-	324	8	23	114	62	-	118	648	648	-	-	1,934	275	-	-	-	101,883	5,830	-
2b.1.2.30	TURB-BLD-272-4_2	-	68	4	15	95	26	-	40	248	248	-	-	1,612	119	-	-	-	75,176	1,106	-
2b.1.2.31	TURB-BLD-272-5_2	-	51	3	10	62	18	-	28	173	173	-	-	1,048	82	-	-	-	49,498	779	-
2b.1.2.32	TURB-BLD-272-6_2	-	70	4	16	91	30	-	41	252	252	-	-	1,546	133	-	-	-	74,075	1,069	-
2b.1.2.33	TURB-BLD-272-9_0	-	12	-	-	-	-	-	2	13	-	-	13	-	-	-	-	-	-	212	-
2b.1.2	Totals	-	3,845	168	474	2,144	1,509	-	1,747	9,887	9,874	-	13	36,406	6,703	-	-	-	2,045,767	70,597	-
Control/Radwaste/Other Building System Components																					
2b.1.3.1	CONT-BLD-248-1_0	-	144	-	-	-	-	-	22	165	-	-	165	-	-	-	-	-	-	2,578	-
2b.1.3.2	CONT-BLD-248-1_2	-	1	0	0	0	1	-	0	3	3	-	-	2	4	-	-	-	413	10	-
2b.1.3.3	CONT-BLD-248-2_0	-	4	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	74	-
2b.1.3.4	CONT-BLD-262-1_0	-	110	-	-	-	-	-	16	126	-	-	126	-	-	-	-	-	-	1,974	-
2b.1.3.5	CONT-BLD-272-1_0	-	48	-	-	-	-	-	7	55	-	-	55	-	-	-	-	-	-	874	-

Table D-1
Vermont Yankee Nuclear Power Station
Scenario 3: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Control/Radwaste/Other Building System Components (continued)																					
2b.1.3.6	CST-BASE-TRENCH_2	-	349	14	53	325	91	-	168	1,001	1,001	-	-	5,526	439	-	-	-	258,479	6,408	-
2b.1.3.7	CT_0	-	205	-	-	-	-	-	31	236	-	-	236	-	-	-	-	-	-	3,726	-
2b.1.3.8	DISCHARGE-STR_0	-	61	-	-	-	-	-	9	70	-	-	70	-	-	-	-	-	-	1,111	-
2b.1.3.9	DST-BASE_0	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	367	-
2b.1.3.10	INTAKE-STR_0	-	148	-	-	-	-	-	22	170	-	-	170	-	-	-	-	-	-	2,675	-
2b.1.3.11	NORTH-WAREHOUSE_2	-	26	0	1	8	3	-	9	49	49	-	-	138	14	-	-	-	6,830	477	-
2b.1.3.12	RW-BLD-230-1_3	-	107	12	18	-	133	-	64	334	334	-	-	-	721	-	-	-	50,021	2,008	-
2b.1.3.13	RW-BLD-230-2_3	-	139	18	26	-	191	-	88	463	463	-	-	-	1,051	-	-	-	71,955	2,623	-
2b.1.3.14	RW-BLD-230-3_3	-	61	5	7	-	51	-	30	153	153	-	-	-	238	-	-	-	19,202	1,132	-
2b.1.3.15	RW-BLD-230-4_3	-	43	4	6	-	46	-	23	122	122	-	-	-	249	-	-	-	17,241	803	-
2b.1.3.16	RW-BLD-230-5_3	-	33	3	4	-	32	-	17	90	90	-	-	-	171	-	-	-	12,002	629	-
2b.1.3.17	RW-BLD-230-7_3	-	150	12	18	-	134	-	75	389	389	-	-	-	594	-	-	-	50,458	2,676	-
2b.1.3.18	RW-BLD-246-8_2	-	45	2	4	3	23	-	18	95	95	-	-	49	103	-	-	-	10,721	825	-
2b.1.3.19	RW-BLD-252-10_2	-	13	0	0	3	1	-	4	21	21	-	-	44	4	-	-	-	2,137	257	-
2b.1.3.20	RW-BLD-252-11_2	-	12	0	1	5	3	-	5	27	27	-	-	93	14	-	-	-	5,004	223	-
2b.1.3.21	RW-BLD-252-12_2	-	94	3	10	63	13	-	38	221	221	-	-	1,070	67	-	-	-	48,427	1,712	-
2b.1.3.22	RW-BLD-252-13_2	-	77	4	9	38	30	-	34	191	191	-	-	642	165	-	-	-	37,276	1,404	-
2b.1.3.23	RW-BLD-252-1_2	-	63	1	2	16	2	-	19	103	103	-	-	264	11	-	-	-	11,618	1,203	-
2b.1.3.24	RW-BLD-252-2_2	-	35	2	5	13	25	-	18	99	99	-	-	229	111	-	-	-	18,743	667	-
2b.1.3.25	RW-BLD-252-3_2	-	15	0	1	4	2	-	5	27	27	-	-	72	7	-	-	-	3,569	283	-
2b.1.3.26	RW-BLD-252-4_2	-	25	0	1	7	4	-	9	46	46	-	-	116	18	-	-	-	6,246	481	-
2b.1.3.27	RW-BLD-252-5_2	-	37	1	3	15	12	-	15	83	83	-	-	256	52	-	-	-	14,774	669	-
2b.1.3.28	RW-BLD-252-6_3	-	73	8	10	-	75	-	39	205	205	-	-	-	331	-	-	-	28,118	1,345	-
2b.1.3.29	RW-BLD-252-7_3	-	26	2	3	-	23	-	13	68	68	-	-	-	123	-	-	-	8,810	501	-
2b.1.3.30	RW-BLD-252-8_2	-	43	2	4	7	22	-	18	96	96	-	-	119	96	-	-	-	12,983	789	-
2b.1.3.31	RW-BLD-252-9_3	-	50	3	5	-	37	-	23	118	118	-	-	-	182	-	-	-	13,871	932	-
2b.1.3.32	RW-BLD-264-1_2	-	4	0	0	0	0	-	1	5	5	-	-	2	0	-	-	-	86	78	-
2b.1.3.33	RW-BLD-264-2_2	-	5	0	0	1	0	-	1	7	7	-	-	11	0	-	-	-	457	100	-
2b.1.3.34	RW-BLD-264-RF_2	-	16	0	1	6	5	-	6	35	35	-	-	106	20	-	-	-	6,024	306	-
2b.1.3.35	RW-BLD-280-1_2	-	11	0	1	6	4	-	5	29	29	-	-	109	18	-	-	-	5,937	220	-
2b.1.3.36	RW-BLD-280-2_2	-	9	0	0	1	1	-	3	13	13	-	-	20	3	-	-	-	1,114	166	-
2b.1.3.37	SERV-BLD-248-1_2	-	68	1	4	20	12	-	24	129	129	-	-	345	51	-	-	-	18,363	1,265	-
2b.1.3.38	STACK_2	-	64	2	6	26	17	-	25	140	140	-	-	441	77	-	-	-	24,457	1,150	-
2b.1.3.39	YARD-252-CONT_2	-	557	112	261	631	1,337	-	619	3,517	3,517	-	-	10,709	5,912	-	-	-	937,443	10,334	-
2b.1.3.40	YARD-252-CONT_3	-	46	4	6	-	44	-	24	124	124	-	-	-	195	-	-	-	16,564	750	-
2b.1.3.41	YARD-252_0	-	297	-	-	-	-	-	45	342	-	-	342	-	-	-	-	-	-	5,517	-
2b.1.3	Totals	-	3,336	219	474	1,199	2,374	-	1,597	9,198	8,005	-	1,193	20,363	11,042	-	-	-	1,719,343	61,320	-
2b.1.4	Scaffolding in support of decommissioning	-	890	38	20	128	13	-	252	1,340	1,340	-	-	1,968	219	-	-	-	98,393	17,585	-
Decontamination of Site Buildings																					
2b.1.5.1	Reactor	2,238	1,308	135	500	2,968	339	-	2,065	9,553	9,553	-	-	50,400	6,064	-	-	-	2,472,533	58,193	-
2b.1.5.2	AOG	103	97	2	34	1	50	-	93	380	380	-	-	23	947	-	-	-	82,946	3,122	-
2b.1.5.3	Control	1	2	0	1	-	1	-	1	5	5	-	-	-	18	-	-	-	1,566	36	-
2b.1.5.4	Equipment Lock	7	2	0	3	-	5	-	6	23	23	-	-	-	86	-	-	-	7,410	145	-
2b.1.5.5	LLRW	1	-	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	11	-
2b.1.5.6	Misc Cont Yard Structures	107	195	3	58	-	87	-	133	583	583	-	-	-	1,649	-	-	-	142,902	4,730	-
2b.1.5.7	North Warehouse	35	7	1	9	-	14	-	24	91	91	-	-	-	261	-	-	-	22,620	656	-
2b.1.5.8	Radwaste	80	144	4	52	3	79	-	104	465	465	-	-	44	1,481	-	-	-	128,442	3,482	-
2b.1.5.9	Radwaste Compactor	3	10	0	4	-	5	-	6	29	29	-	-	-	103	-	-	-	8,958	211	-
2b.1.5.10	Service	1	18	0	6	-	9	-	8	44	44	-	-	-	177	-	-	-	15,318	296	-
2b.1.5.11	Turbine	571	438	14	212	99	304	-	519	2,157	2,157	-	-	1,673	5,737	-	-	-	561,722	15,664	-
2b.1.5.12	Vent Stack	7	59	1	22	-	32	-	30	151	151	-	-	-	610	-	-	-	52,878	1,020	-
2b.1.5	Totals	3,155	2,280	160	900	3,070	925	-	2,990	13,481	13,481	-	-	52,139	17,133	-	-	-	3,497,295	87,566	-
2b.1	Subtotal Period 2b Activity Costs	3,155	16,913	979	2,758	9,284	8,826	-	9,811	51,726	50,519	-	1,206	157,444	52,887	-	-	-	10,757,270	361,368	-
Period 2b Additional Costs																					
2b.2.1	Remedial Action Support Surveys	-	-	-	-	-	-	3,043	913	3,955	3,955	-	-	-	-	-	-	-	-	20,800	-
2b.2.2	Soil Remediation	-	166	52	5,557	-	7,786	-	2,826	16,386	16,386	-	-	-	142,773	-	-	-	12,849,600	3,402	-

Table D-1
Vermont Yankee Nuclear Power Station
Scenario 3: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2b Additional Costs (continued)																					
2b.2.3	Underground Services Excavations	-	1,365	-	-	-	-	-	205	1,569	1,569	-	-	-	-	-	-	-	-	15,911	-
2b.2.4	Asbestos Remediation	-	1,082	3	138	-	602	-	-	1,826	1,826	-	-	-	9,938	-	-	-	129,188	13,287	-
2b.2.5	Septic Field Removal	-	-	-	-	-	-	1,724	259	1,983	1,983	-	-	-	-	-	-	-	-	-	-
2b.2	Subtotal Period 2b Additional Costs	-	2,612	55	5,696	-	8,388	4,767	4,203	25,720	25,720	-	-	-	152,711	-	-	-	12,978,790	53,400	-
Period 2b Collateral Costs																					
2b.3.1	Process decommissioning water waste	175	-	62	469	-	466	-	281	1,453	1,453	-	-	-	1,159	-	-	-	69,539	226	-
2b.3.3	Small tool allowance	-	282	-	-	-	-	-	42	324	324	-	-	-	-	-	-	-	-	-	-
2b.3.4	Decommissioning Equipment Disposition	-	-	115	73	392	41	-	91	711	711	-	-	6,000	667	-	-	-	300,000	88	-
2b.3.5	Spent Fuel Capital and Transfer	-	-	-	-	-	-	30,259	4,539	34,798	-	34,798	-	-	-	-	-	-	-	-	-
2b.3.6	On-site survey and release of 25.85 tons clean metallic waste	-	-	-	-	-	-	28	3	31	31	-	-	-	-	-	-	-	-	-	-
2b.3	Subtotal Period 2b Collateral Costs	175	282	177	542	392	506	30,288	4,956	37,318	2,520	34,798	-	6,000	1,826	-	-	-	369,539	314	-
Period 2b Period-Dependent Costs																					
2b.4.1	Decon supplies	1,479	-	-	-	-	-	-	370	1,849	1,849	-	-	-	-	-	-	-	-	-	-
2b.4.2	Insurance	-	-	-	-	-	-	1,049	105	1,154	1,154	-	-	-	-	-	-	-	-	-	-
2b.4.3	Property taxes	-	-	-	-	-	-	17	2	19	19	-	-	-	-	-	-	-	-	-	-
2b.4.4	Health physics supplies	-	2,211	-	-	-	-	-	553	2,763	2,763	-	-	-	-	-	-	-	-	-	-
2b.4.5	Heavy equipment rental	-	3,667	-	-	-	-	-	550	4,217	4,217	-	-	-	-	-	-	-	-	-	-
2b.4.6	Disposal of DAW generated	-	-	110	103	-	474	-	145	831	831	-	-	-	6,382	-	-	-	127,632	208	-
2b.4.7	Plant energy budget	-	-	-	-	-	-	2,208	331	2,539	2,539	-	-	-	-	-	-	-	-	-	-
2b.4.8	NRC Fees	-	-	-	-	-	-	1,308	131	1,439	1,439	-	-	-	-	-	-	-	-	-	-
2b.4.9	Emergency Planning Fees	-	-	-	-	-	-	10,278	1,028	11,306	-	11,306	-	-	-	-	-	-	-	-	-
2b.4.10	Site O&M	-	-	-	-	-	-	522	78	600	600	-	-	-	-	-	-	-	-	-	-
2b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	1,915	287	2,202	-	2,202	-	-	-	-	-	-	-	-	-
2b.4.12	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	486	73	559	559	-	-	-	-	-	-	-	-	-	-
2b.4.13	ISFSI Operating Costs	-	-	-	-	-	-	224	34	258	-	258	-	-	-	-	-	-	-	-	-
2b.4.14	Corporate A&G	-	-	-	-	-	-	4,036	605	4,641	4,641	-	-	-	-	-	-	-	-	-	-
2b.4.15	Security Staff Cost	-	-	-	-	-	-	11,341	1,701	13,043	13,043	-	-	-	-	-	-	-	-	-	331,069
2b.4.16	DOC Staff Cost	-	-	-	-	-	-	32,986	4,948	37,934	37,934	-	-	-	-	-	-	-	-	-	382,103
2b.4.17	Utility Staff Cost	-	-	-	-	-	-	41,417	6,213	47,629	47,629	-	-	-	-	-	-	-	-	-	709,246
2b.4	Subtotal Period 2b Period-Dependent Costs	1,479	5,877	110	103	-	474	107,788	17,153	132,983	119,217	13,767	-	-	6,382	-	-	-	127,632	208	1,422,417
2b.0	TOTAL PERIOD 2b COST	4,810	25,684	1,321	9,098	9,675	18,193	142,843	36,123	247,747	197,975	48,565	1,206	163,444	213,805	-	-	-	24,233,230	415,290	1,422,417
PERIOD 2d - Decontamination Following Wet Fuel Storage																					
Period 2d Direct Decommissioning Activities																					
2d.1.1	Remove spent fuel racks	611	67	132	260	-	1,908	-	852	3,830	3,830	-	-	-	8,439	-	-	-	717,311	1,332	-
Reactor Building System Components(SFP Area)																					
2d.1.2.1	RX-BLD-318-3_3	-	29	2	3	-	21	-	13	67	67	-	-	-	92	-	-	-	7,792	531	-
2d.1.2.2	RX-BLD-345-1_3	-	398	1	1	-	7	-	102	509	509	-	-	-	31	-	-	-	2,619	7,779	-
2d.1.2.3	RX-BLD-345-2_3	-	280	0	0	-	2	-	70	352	352	-	-	-	7	-	-	-	631	5,471	-
2d.1.2.4	RX-BLD-345-3_2	-	612	0	1	8	2	-	155	779	779	-	-	136	9	-	-	-	6,249	11,955	-
2d.1.2.5	RX-BLD-345-3_3	-	7	1	1	-	7	-	4	20	20	-	-	-	32	-	-	-	2,760	142	-
2d.1.2	Totals	-	1,327	4	6	8	39	-	344	1,727	1,727	-	-	136	171	-	-	-	20,051	25,877	-
Decontamination of Site Buildings																					
2d.1.5.1	Reactor (post fuel)	161	381	31	505	45	2,145	-	798	4,065	4,065	-	-	768	18,287	-	-	-	1,330,666	8,304	-
2d.1.5	Totals	161	381	31	505	45	2,145	-	798	4,065	4,065	-	-	768	18,287	-	-	-	1,330,666	8,304	-
2d.1.6	Scaffolding in support of decommissioning	-	148	6	3	21	2	-	42	223	223	-	-	328	36	-	-	-	16,399	2,931	-
2d.1	Subtotal Period 2d Activity Costs	773	1,923	172	774	75	4,094	-	2,035	9,846	9,846	-	-	1,232	26,934	-	-	-	2,084,426	38,444	-
Period 2d Collateral Costs																					
2d.3.1	Process decommissioning water waste	70	-	25	188	-	187	-	113	583	583	-	-	-	466	-	-	-	27,932	91	-
2d.3.3	Small tool allowance	-	35	-	-	-	-	-	5	40	40	-	-	-	-	-	-	-	-	-	-
2d.3.4	Decommissioning Equipment Disposition	-	-	115	73	392	41	-	91	711	711	-	-	6,000	667	-	-	-	300,000	88	-

Table D-1
Vermont Yankee Nuclear Power Station
Scenario 3: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2d Collateral Costs (continued)																					
2d.3.5	Spent Fuel Capital and Transfer	-	-	-	-	-	-	71	11	81	-	81	-	-	-	-	-	-	-	-	-
2d.3	Subtotal Period 2d Collateral Costs	70	35	140	262	392	228	71	220	1,415	1,334	81	-	6,000	1,132	-	-	-	327,932	179	-
Period 2d Period-Dependent Costs																					
2d.4.1	Decon supplies	91	-	-	-	-	-	-	23	113	113	-	-	-	-	-	-	-	-	-	-
2d.4.2	Insurance	-	-	-	-	-	-	219	22	241	241	-	-	-	-	-	-	-	-	-	-
2d.4.3	Property taxes	-	-	-	-	-	-	4	0	4	4	-	-	-	-	-	-	-	-	-	-
2d.4.4	Health physics supplies	-	289	-	-	-	-	-	72	361	361	-	-	-	-	-	-	-	-	-	-
2d.4.5	Heavy equipment rental	-	765	-	-	-	-	-	115	879	879	-	-	-	-	-	-	-	-	-	-
2d.4.6	Disposal of DAW generated	-	-	19	18	-	82	-	25	144	144	-	-	-	1,107	-	-	-	22,132	36	-
2d.4.7	Plant energy budget	-	-	-	-	-	-	246	37	282	282	-	-	-	-	-	-	-	-	-	-
2d.4.8	NRC Fees	-	-	-	-	-	-	262	26	288	288	-	-	-	-	-	-	-	-	-	-
2d.4.9	Emergency Planning Fees	-	-	-	-	-	-	189	19	208	-	208	-	-	-	-	-	-	-	-	-
2d.4.10	Site O&M	-	-	-	-	-	-	109	16	125	125	-	-	-	-	-	-	-	-	-	-
2d.4.11	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	203	30	233	233	-	-	-	-	-	-	-	-	-	-
2d.4.12	ISFSI Operating Costs	-	-	-	-	-	-	47	7	54	-	54	-	-	-	-	-	-	-	-	-
2d.4.13	Corporate A&G	-	-	-	-	-	-	624	94	718	718	-	-	-	-	-	-	-	-	-	-
2d.4.14	Security Staff Cost	-	-	-	-	-	-	1,293	194	1,487	1,487	-	-	-	-	-	-	-	-	-	36,290
2d.4.15	DOC Staff Cost	-	-	-	-	-	-	4,694	704	5,398	5,398	-	-	-	-	-	-	-	-	-	54,571
2d.4.16	Utility Staff Cost	-	-	-	-	-	-	6,351	953	7,304	7,304	-	-	-	-	-	-	-	-	-	104,231
2d.4	Subtotal Period 2d Period-Dependent Costs	91	1,053	19	18	-	82	14,240	2,337	17,840	17,578	262	-	-	1,107	-	-	-	22,132	36	195,093
2d.0	TOTAL PERIOD 2d COST	933	3,011	331	1,054	466	4,404	14,311	4,592	29,102	28,759	343	-	7,232	29,172	-	-	-	2,434,491	38,659	195,093
PERIOD 2f - License Termination																					
Period 2f Direct Decommissioning Activities																					
2f.1.1	ORISE confirmatory survey	-	-	-	-	-	-	149	45	194	194	-	-	-	-	-	-	-	-	-	-
2f.1.2	Terminate license									a											
2f.1	Subtotal Period 2f Activity Costs	-	-	-	-	-	-	149	45	194	194	-	-	-	-	-	-	-	-	-	-
Period 2f Additional Costs																					
2f.2.1	License Termination Survey	-	-	-	-	-	-	5,451	1,635	7,087	7,087	-	-	-	-	-	-	-	-	64,820	-
2f.2.2	Confirmation and Verification Survey	-	-	-	-	-	-	1,651	495	2,146	2,146	-	-	-	-	-	-	-	-	9,784	-
2f.2	Subtotal Period 2f Additional Costs	-	-	-	-	-	-	7,102	2,131	9,232	9,232	-	-	-	-	-	-	-	-	74,604	-
Period 2f Collateral Costs																					
2f.3.1	DOC staff relocation expenses	-	-	-	-	-	-	1,030	154	1,184	1,184	-	-	-	-	-	-	-	-	-	-
2f.3.2	Spent Fuel Capital and Transfer	-	-	-	-	-	-	222	33	255	-	255	-	-	-	-	-	-	-	-	-
2f.3	Subtotal Period 2f Collateral Costs	-	-	-	-	-	-	1,251	188	1,439	1,184	255	-	-	-	-	-	-	-	-	-
Period 2f Period-Dependent Costs																					
2f.4.1	Insurance	-	-	-	-	-	-	289	29	317	317	-	-	-	-	-	-	-	-	-	-
2f.4.2	Property taxes	-	-	-	-	-	-	5	1	6	6	-	-	-	-	-	-	-	-	-	-
2f.4.3	Health physics supplies	-	449	-	-	-	-	-	112	561	561	-	-	-	-	-	-	-	-	-	-
2f.4.4	Disposal of DAW generated	-	-	6	6	-	26	-	8	45	45	-	-	-	348	-	-	-	6,968	11	-
2f.4.5	Plant energy budget	-	-	-	-	-	-	174	26	200	200	-	-	-	-	-	-	-	-	-	-
2f.4.6	NRC Fees	-	-	-	-	-	-	371	37	408	408	-	-	-	-	-	-	-	-	-	-
2f.4.7	Emergency Planning Fees	-	-	-	-	-	-	268	27	294	-	294	-	-	-	-	-	-	-	-	-
2f.4.8	Site O&M	-	-	-	-	-	-	154	23	177	177	-	-	-	-	-	-	-	-	-	-
2f.4.9	ISFSI Operating Costs	-	-	-	-	-	-	66	10	76	-	76	-	-	-	-	-	-	-	-	-
2f.4.10	Corporate A&G	-	-	-	-	-	-	727	109	836	836	-	-	-	-	-	-	-	-	-	-
2f.4.11	Security Staff Cost	-	-	-	-	-	-	1,790	269	2,059	2,059	-	-	-	-	-	-	-	-	-	50,143
2f.4.12	DOC Staff Cost	-	-	-	-	-	-	4,903	735	5,638	5,638	-	-	-	-	-	-	-	-	-	56,314
2f.4.13	Utility Staff Cost	-	-	-	-	-	-	5,177	777	5,954	5,954	-	-	-	-	-	-	-	-	-	79,457
2f.4	Subtotal Period 2f Period-Dependent Costs	-	449	6	6	-	26	13,922	2,162	16,570	16,200	370	-	-	348	-	-	-	6,968	11	185,914
2f.0	TOTAL PERIOD 2f COST	-	449	6	6	-	26	22,424	4,525	27,435	26,810	626	-	-	348	-	-	-	6,968	74,615	185,914
PERIOD 2 TOTALS		6,293	51,289	15,388	16,539	22,631	47,019	268,490	85,450	513,099	430,020	81,852	1,227	342,874	287,014	1,247	918	-	39,058,180	761,205	2,674,449

Table D-1
Vermont Yankee Nuclear Power Station
Scenario 3: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 3b - Site Restoration																					
Period 3b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
3b.1.1.1	Reactor	-	4,030	-	-	-	-	-	605	4,635	-	-	4,635	-	-	-	-	-	-	47,743	-
3b.1.1.2	AOG	-	1,617	-	-	-	-	-	243	1,859	-	-	1,859	-	-	-	-	-	-	19,704	-
3b.1.1.3	Bottle Storage Shed	-	6	-	-	-	-	-	1	7	-	-	7	-	-	-	-	-	-	81	-
3b.1.1.4	Construction Office	-	58	-	-	-	-	-	9	67	-	-	67	-	-	-	-	-	-	961	-
3b.1.1.5	Control	-	174	-	-	-	-	-	26	200	-	-	200	-	-	-	-	-	-	2,292	-
3b.1.1.6	Control Access	-	35	-	-	-	-	-	5	40	-	-	40	-	-	-	-	-	-	549	-
3b.1.1.7	Cooling Towers	-	1,857	-	-	-	-	-	279	2,136	-	-	2,136	-	-	-	-	-	-	30,896	-
3b.1.1.8	Discharge & Aerating Structures	-	207	-	-	-	-	-	31	238	-	-	238	-	-	-	-	-	-	1,615	-
3b.1.1.9	Equipment Lock	-	76	-	-	-	-	-	11	87	-	-	87	-	-	-	-	-	-	1,039	-
3b.1.1.10	Gatehouse 1	-	10	-	-	-	-	-	2	12	-	-	12	-	-	-	-	-	-	148	-
3b.1.1.11	Gatehouse 2	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	287	-
3b.1.1.12	Intake Structure	-	372	-	-	-	-	-	56	427	-	-	427	-	-	-	-	-	-	4,004	-
3b.1.1.13	LLRW	-	77	-	-	-	-	-	12	89	-	-	89	-	-	-	-	-	-	1,126	-
3b.1.1.14	Misc Cont Yard Structures	-	167	-	-	-	-	-	25	192	-	-	192	-	-	-	-	-	-	2,170	-
3b.1.1.15	Misc Yard Structures	-	501	-	-	-	-	-	75	576	-	-	576	-	-	-	-	-	-	6,685	-
3b.1.1.16	New Warehouse	-	257	-	-	-	-	-	39	296	-	-	296	-	-	-	-	-	-	4,052	-
3b.1.1.17	North Warehouse	-	56	-	-	-	-	-	8	64	-	-	64	-	-	-	-	-	-	649	-
3b.1.1.18	Office Area (Turbine Bldg)	-	102	-	-	-	-	-	15	117	-	-	117	-	-	-	-	-	-	1,530	-
3b.1.1.19	Piping and Excavations	-	967	-	-	-	-	-	145	1,112	-	-	1,112	-	-	-	-	-	-	4,877	-
3b.1.1.20	Radwaste	-	238	-	-	-	-	-	36	273	-	-	273	-	-	-	-	-	-	2,964	-
3b.1.1.21	Radwaste Compactor	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	70	-
3b.1.1.22	Security Modifications	-	518	-	-	-	-	-	78	596	-	-	596	-	-	-	-	-	-	4,901	-
3b.1.1.23	Service	-	62	-	-	-	-	-	9	71	-	-	71	-	-	-	-	-	-	949	-
3b.1.1.24	Turbine	-	2,318	-	-	-	-	-	348	2,665	-	-	2,665	-	-	-	-	-	-	30,292	-
3b.1.1.25	Turbine Pedestal	-	480	-	-	-	-	-	72	552	-	-	552	-	-	-	-	-	-	5,277	-
3b.1.1.26	Turbine Storage Facility	-	112	-	-	-	-	-	17	128	-	-	128	-	-	-	-	-	-	1,986	-
3b.1.1.27	Vent Stack	-	8	-	-	-	-	-	1	10	-	-	10	-	-	-	-	-	-	126	-
3b.1.1.28	Reactor (post fuel)	-	31	-	-	-	-	-	5	35	-	-	35	-	-	-	-	-	-	535	-
3b.1.1	Totals	-	14,361	-	-	-	-	-	2,154	16,515	-	-	16,515	-	-	-	-	-	-	177,509	-
Site Closeout Activities																					
3b.1.2	Grade & landscape site	-	457	-	-	-	-	-	69	526	-	-	526	-	-	-	-	-	-	1,052	-
3b.1.3	Final report to NRC	-	-	-	-	-	-	183	27	210	210	-	-	-	-	-	-	-	-	-	1,560
3b.1	Subtotal Period 3b Activity Costs	-	14,818	-	-	-	-	183	2,250	17,251	210	-	17,041	-	-	-	-	-	-	178,561	1,560
Period 3b Additional Costs																					
3b.2.1	Concrete Processing	-	435	-	313	-	-	567	197	1,512	-	-	1,512	-	-	-	-	-	-	2,402	-
3b.2.2	Intake & Discharge Cofferdams	-	621	-	-	-	-	-	93	714	-	-	714	-	-	-	-	-	-	6,400	-
3b.2.3	Backfill Underground Services Excavation	-	2,450	-	-	-	-	-	367	2,817	-	-	2,817	-	-	-	-	-	-	8,066	-
3b.2.4	Backfill Structures	-	1,931	-	-	-	-	-	290	2,220	-	-	2,220	-	-	-	-	-	-	6,358	-
3b.2	Subtotal Period 3b Additional Costs	-	5,436	-	313	-	-	567	947	7,263	-	-	7,263	-	-	-	-	-	-	23,226	-
Period 3b Collateral Costs																					
3b.3.1	Small tool allowance	-	155	-	-	-	-	-	23	178	-	-	178	-	-	-	-	-	-	-	-
3b.3.2	Spent Fuel Capital and Transfer	-	-	-	-	-	-	255	38	293	-	293	-	-	-	-	-	-	-	-	-
3b.3.3	Site O&M	-	-	-	-	-	-	208	31	239	-	-	239	-	-	-	-	-	-	-	-
3b.3	Subtotal Period 3b Collateral Costs	-	155	-	-	-	-	463	93	711	-	293	418	-	-	-	-	-	-	-	-
Period 3b Period-Dependent Costs																					
3b.4.1	Insurance	-	-	-	-	-	-	586	59	644	-	644	-	-	-	-	-	-	-	-	-
3b.4.2	Property taxes	-	-	-	-	-	-	10	1	11	-	-	11	-	-	-	-	-	-	-	-
3b.4.3	Heavy equipment rental	-	3,144	-	-	-	-	-	472	3,615	-	-	3,615	-	-	-	-	-	-	-	-
3b.4.4	Plant energy budget	-	-	-	-	-	-	176	26	203	-	-	203	-	-	-	-	-	-	-	-
3b.4.5	NRC ISFSI Fees	-	-	-	-	-	-	295	-	295	-	295	-	-	-	-	-	-	-	-	-
3b.4.6	Emergency Planning Fees	-	-	-	-	-	-	543	54	597	-	597	-	-	-	-	-	-	-	-	-
3b.4.7	ISFSI Operating Costs	-	-	-	-	-	-	134	20	154	-	154	-	-	-	-	-	-	-	-	-

Table D-1
Vermont Yankee Nuclear Power Station
Scenario 3: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 3b Period-Dependent Costs (continued)																					
3b.4.8	Corporate A&G	-	-	-	-	-	-	508	76	584	-	-	584	-	-	-	-	-	-	-	-
3b.4.9	Security Staff Cost	-	-	-	-	-	-	3,633	545	4,178	0	3,510	669	-	-	-	-	-	-	-	101,771
3b.4.10	DOC Staff Cost	-	-	-	-	-	-	9,655	1,448	11,103	-	-	11,103	-	-	-	-	-	-	-	106,469
3b.4.11	Utility Staff Cost	-	-	-	-	-	-	5,528	829	6,357	0	1,526	4,832	-	-	-	-	-	-	-	85,331
3b.4	Subtotal Period 3b Period-Dependent Costs	-	3,144	-	-	-	-	21,068	3,531	27,743	0	6,726	21,016	-	-	-	-	-	-	-	293,571
3b.0	TOTAL PERIOD 3b COST	-	23,553	-	313	-	-	22,281	6,821	52,967	210	7,020	45,737	-	-	-	-	-	-	201,787	295,131
PERIOD 3c - Fuel Storage Operations/Shipping																					
Period 3c Direct Decommissioning Activities																					
Period 3c Collateral Costs																					
3c.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	5,652	848	6,500	-	6,500	-	-	-	-	-	-	-	-	-
3c.3	Subtotal Period 3c Collateral Costs	-	-	-	-	-	-	5,652	848	6,500	-	6,500	-	-	-	-	-	-	-	-	-
Period 3c Period-Dependent Costs																					
3c.4.1	Insurance	-	-	-	-	-	-	7,997	800	8,797	-	8,797	-	-	-	-	-	-	-	-	-
3c.4.2	Property taxes	-	-	-	-	-	-	139	14	153	-	153	-	-	-	-	-	-	-	-	-
3c.4.3	Plant energy budget	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3c.4.4	NRC ISFSI Fees	-	-	-	-	-	-	4,024	-	4,024	-	4,024	-	-	-	-	-	-	-	-	-
3c.4.5	Emergency Planning Fees	-	-	-	-	-	-	7,415	742	8,157	-	8,157	-	-	-	-	-	-	-	-	-
3c.4.6	Site O&M	-	-	-	-	-	-	4,261	639	4,900	-	4,900	-	-	-	-	-	-	-	-	-
3c.4.7	ISFSI Operating Costs	-	-	-	-	-	-	1,834	275	2,109	-	2,109	-	-	-	-	-	-	-	-	-
3c.4.8	Corporate A&G	-	-	-	-	-	-	4,520	678	5,198	-	5,198	-	-	-	-	-	-	-	-	-
3c.4.9	Security Staff Cost	-	-	-	-	-	-	41,909	6,286	48,195	-	48,195	-	-	-	-	-	-	-	-	1,154,366
3c.4.10	Utility Staff Cost	-	-	-	-	-	-	18,286	2,743	21,029	-	21,029	-	-	-	-	-	-	-	-	288,591
3c.4	Subtotal Period 3c Period-Dependent Costs	-	-	-	-	-	-	90,384	12,177	102,561	-	102,561	-	-	-	-	-	-	-	-	1,442,957
3c.0	TOTAL PERIOD 3c COST	-	-	-	-	-	-	96,037	13,024	109,061	-	109,061	-	-	-	-	-	-	-	-	1,442,957
PERIOD 3d - GTCC shipping																					
Period 3d Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
3d.1.1.1	Vessel & Internals GTCC Disposal	-	-	500	-	-	4,926	-	789	6,215	6,215	-	-	-	-	-	-	1,785	347,940	-	-
3d.1.1	Totals	-	-	500	-	-	4,926	-	789	6,215	6,215	-	-	-	-	-	-	1,785	347,940	-	-
3d.1	Subtotal Period 3d Activity Costs	-	-	500	-	-	4,926	-	789	6,215	6,215	-	-	-	-	-	-	1,785	347,940	-	-
Period 3d Period-Dependent Costs																					
3d.4.1	Insurance	-	-	-	-	-	-	15	1	16	-	16	-	-	-	-	-	-	-	-	-
3d.4.2	Property taxes	-	-	-	-	-	-	0	0	0	-	0	-	-	-	-	-	-	-	-	-
3d.4.3	Plant energy budget	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3d.4.4	NRC ISFSI Fees	-	-	-	-	-	-	8	-	8	-	8	-	-	-	-	-	-	-	-	-
3d.4.5	Emergency Planning Fees	-	-	-	-	-	-	14	1	15	-	15	-	-	-	-	-	-	-	-	-
3d.4.6	Site O&M	-	-	-	-	-	-	8	1	9	-	9	-	-	-	-	-	-	-	-	-
3d.4.7	ISFSI Operating Costs	-	-	-	-	-	-	3	1	4	-	4	-	-	-	-	-	-	-	-	-
3d.4.8	Corporate A&G	-	-	-	-	-	-	8	1	10	-	10	-	-	-	-	-	-	-	-	-
3d.4.9	Security Staff Cost	-	-	-	-	-	-	78	12	90	-	90	-	-	-	-	-	-	-	-	2,160
3d.4.10	Utility Staff Cost	-	-	-	-	-	-	34	5	39	-	39	-	-	-	-	-	-	-	-	540
3d.4	Subtotal Period 3d Period-Dependent Costs	-	-	-	-	-	-	169	23	192	-	192	-	-	-	-	-	-	-	-	2,700
3d.0	TOTAL PERIOD 3d COST	-	-	500	-	-	4,926	169	812	6,406	6,215	192	-	-	-	-	-	1,785	347,940	-	2,700

Table D-1
Vermont Yankee Nuclear Power Station
Scenario 3: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 3e - ISFSI Decontamination																					
Period 3e Additional Costs																					
3e.2.1	ISFSI License Termination	-	33	5	32	-	75	1,280	224	1,648	-	1,648	-	-	1,231	-	-	-	102,129	3,165	2,560
3e.2	Subtotal Period 3e Additional Costs	-	33	5	32	-	75	1,280	224	1,648	-	1,648	-	-	1,231	-	-	-	102,129	3,165	2,560
Period 3e Collateral Costs																					
3e.3.1	Small tool allowance	-	0	-	-	-	-	-	0	0	-	0	-	-	-	-	-	-	-	-	-
3e.3	Subtotal Period 3e Collateral Costs	-	0	-	-	-	-	-	0	0	-	0	-	-	-	-	-	-	-	-	-
Period 3e Period-Dependent Costs																					
3e.4.1	Insurance	-	-	-	-	-	-	129	13	142	-	142	-	-	-	-	-	-	-	-	-
3e.4.2	Property taxes	-	-	-	-	-	-	2	0	2	-	2	-	-	-	-	-	-	-	-	-
3e.4.3	Heavy equipment rental	-	192	-	-	-	-	-	29	221	-	221	-	-	-	-	-	-	-	-	-
3e.4.4	Plant energy budget	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3e.4.5	NRC ISFSI Fees	-	-	-	-	-	-	58	-	58	-	58	-	-	-	-	-	-	-	-	-
3e.4.6	Site O&M	-	-	-	-	-	-	69	10	79	-	79	-	-	-	-	-	-	-	-	-
3e.4.7	Corporate A&G	-	-	-	-	-	-	86	13	99	-	99	-	-	-	-	-	-	-	-	-
3e.4.8	Security Staff Cost	-	-	-	-	-	-	86	13	99	-	99	-	-	-	-	-	-	-	-	5,013
3e.4.9	Utility Staff Cost	-	-	-	-	-	-	252	38	290	-	290	-	-	-	-	-	-	-	-	3,803
3e.4	Subtotal Period 3e Period-Dependent Costs	-	192	-	-	-	-	683	116	991	-	991	-	-	-	-	-	-	-	-	8,816
3e.0	TOTAL PERIOD 3e COST	-	225	5	32	-	75	1,963	340	2,640	-	2,640	-	-	1,231	-	-	-	102,129	3,165	11,376
PERIOD 3f - ISFSI Site Restoration																					
Period 3f Additional Costs																					
3f.2.1	ISFSI Demolitions and Site Restoration	-	1,298	-	-	-	-	78	206	1,582	-	1,582	-	-	-	-	-	-	-	17,348	160
3f.2	Subtotal Period 3f Additional Costs	-	1,298	-	-	-	-	78	206	1,582	-	1,582	-	-	-	-	-	-	-	17,348	160
Period 3f Collateral Costs																					
3f.3.1	Small tool allowance	-	13	-	-	-	-	-	2	15	-	15	-	-	-	-	-	-	-	-	-
3f.3	Subtotal Period 3f Collateral Costs	-	13	-	-	-	-	-	2	15	-	15	-	-	-	-	-	-	-	-	-
Period 3f Period-Dependent Costs																					
3f.4.1	Insurance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3f.4.2	Property taxes	-	-	-	-	-	-	1	0	1	-	1	-	-	-	-	-	-	-	-	-
3f.4.3	Heavy equipment rental	-	76	-	-	-	-	-	11	87	-	87	-	-	-	-	-	-	-	-	-
3f.4.4	Plant energy budget	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3f.4.5	Site O&M	-	-	-	-	-	-	35	5	40	-	40	-	-	-	-	-	-	-	-	-
3f.4.6	Corporate A&G	-	-	-	-	-	-	43	7	50	-	50	-	-	-	-	-	-	-	-	-
3f.4.7	Security Staff Cost	-	-	-	-	-	-	43	7	50	-	50	-	-	-	-	-	-	-	-	2,527
3f.4.8	Utility Staff Cost	-	-	-	-	-	-	107	16	122	-	122	-	-	-	-	-	-	-	-	1,569
3f.4	Subtotal Period 3f Period-Dependent Costs	-	76	-	-	-	-	229	46	351	-	351	-	-	-	-	-	-	-	-	4,096
3f.0	TOTAL PERIOD 3f COST	-	1,387	-	-	-	-	308	254	1,948	-	1,948	-	-	-	-	-	-	-	17,348	4,256
PERIOD 3 TOTALS		-	25,164	505	345	-	5,001	120,757	21,251	173,023	6,425	120,861	45,737	-	1,231	-	-	1,785	450,069	222,300	1,756,420
TOTAL COST TO DECOMMISSION		**9,462**	**80,322**	**16,337**	**18,762**	**24,323**	**54,734**	**513,205**	**128,278**	**845,422**	**566,714**	**230,821**	**47,887**	**346,162**	**302,088**	**2,106**	**918**	**1,785**	**40,278,720**	**1,000,242**	**5,484,047**

Table D-1
Vermont Yankee Nuclear Power Station
Scenario 3: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours

TOTAL COST TO DECOMMISSION WITH 17.89% CONTINGENCY:	$845,422	thousands of 2011 dollars
TOTAL NRC LICENSE TERMINATION COST IS 67.03% OR:	$566,714	thousands of 2011 dollars
SPENT FUEL MANAGEMENT COST IS 27.3% OR:	$230,821	thousands of 2011 dollars
NON-NUCLEAR DEMOLITION COST IS 5.66% OR:	$47,887	thousands of 2011 dollars
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC):	305,112	cubic feet
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED:	1,785	cubic feet
TOTAL SCRAP METAL REMOVED:	19,208	tons
TOTAL CRAFT LABOR REQUIREMENTS:	1,000,242	man-hours

End Notes:
n/a - indicates that this activity not charged as decommissioning expense.
a - indicates that this activity performed by decommissioning staff.
0 - indicates that this value is less than 0.5 but is non-zero.
a cell containing " - " indicates a zero value

Table D-2
Vermont Yankee Nuclear Power Station
Scenario 4: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a.1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
1a.1.2	Notification of Cessation of Operations									a											
1a.1.3	Remove fuel & source material									n/a											
1a.1.4	Notification of Permanent Defueling									a											
1a.1.5	Deactivate plant systems & process waste									a											
1a.1.6	Prepare and submit PSDAR	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1a.1.7	Review plant dwgs & specs.	-	-	-	-	-	-	538	81	619	619	-	-	-	-	-	-	-	-	-	4,600
1a.1.8	Perform detailed rad survey									a											
1a.1.9	Estimate by-product inventory	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.10	End product description	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.11	Detailed by-product inventory	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
1a.1.12	Define major work sequence	-	-	-	-	-	-	878	132	1,010	1,010	-	-	-	-	-	-	-	-	-	7,500
1a.1.13	Perform SER and EA	-	-	-	-	-	-	363	54	417	417	-	-	-	-	-	-	-	-	-	3,100
1a.1.14	Perform Site-Specific Cost Study	-	-	-	-	-	-	585	88	673	673	-	-	-	-	-	-	-	-	-	5,000
1a.1.15	Prepare/submit License Termination Plan	-	-	-	-	-	-	479	72	551	551	-	-	-	-	-	-	-	-	-	4,096
1a.1.16	Receive NRC approval of termination plan									a											
Activity Specifications																					
1a.1.17.1	Plant & temporary facilities	-	-	-	-	-	-	576	86	662	596	-	66	-	-	-	-	-	-	-	4,920
1a.1.17.2	Plant systems	-	-	-	-	-	-	488	73	561	505	-	56	-	-	-	-	-	-	-	4,167
1a.1.17.3	NSSS Decontamination Flush	-	-	-	-	-	-	59	9	67	67	-	-	-	-	-	-	-	-	-	500
1a.1.17.4	Reactor internals	-	-	-	-	-	-	831	125	956	956	-	-	-	-	-	-	-	-	-	7,100
1a.1.17.5	Reactor vessel	-	-	-	-	-	-	761	114	875	875	-	-	-	-	-	-	-	-	-	6,500
1a.1.17.6	Sacrificial shield	-	-	-	-	-	-	59	9	67	67	-	-	-	-	-	-	-	-	-	500
1a.1.17.7	Moisture separators/reheaters	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.17.8	Reinforced concrete	-	-	-	-	-	-	187	28	215	108	-	108	-	-	-	-	-	-	-	1,600
1a.1.17.9	Main Turbine	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
1a.1.17.10	Main Condensers	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
1a.1.17.11	Pressure suppression structure	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1a.1.17.12	Drywell	-	-	-	-	-	-	187	28	215	215	-	-	-	-	-	-	-	-	-	1,600
1a.1.17.13	Plant structures & buildings	-	-	-	-	-	-	365	55	420	210	-	210	-	-	-	-	-	-	-	3,120
1a.1.17.14	Waste management	-	-	-	-	-	-	538	81	619	619	-	-	-	-	-	-	-	-	-	4,600
1a.1.17.15	Facility & site closeout	-	-	-	-	-	-	105	16	121	61	-	61	-	-	-	-	-	-	-	900
1a.1.17	Total	-	-	-	-	-	-	4,996	749	5,745	5,245	-	501	-	-	-	-	-	-	-	42,683
Planning & Site Preparations																					
1a.1.18	Prepare dismantling sequence	-	-	-	-	-	-	281	42	323	323	-	-	-	-	-	-	-	-	-	2,400
1a.1.19	Plant prep. & temp. svces	-	-	-	-	-	-	2,800	420	3,220	3,220	-	-	-	-	-	-	-	-	-	-
1a.1.20	Design water clean-up system	-	-	-	-	-	-	164	25	188	188	-	-	-	-	-	-	-	-	-	1,400
1a.1.21	Rigging/Cont. Cntrl Envlps/tooling/etc.	-	-	-	-	-	-	2,200	330	2,530	2,530	-	-	-	-	-	-	-	-	-	-
1a.1.22	Procure casks/liners & containers	-	-	-	-	-	-	144	22	166	166	-	-	-	-	-	-	-	-	-	1,230
1a.1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	14,201	2,130	16,331	15,831	-	501	-	-	-	-	-	-	-	78,609
Period 1a Additional Costs																					
1a.2.1	Site Characterization	-	-	-	-	-	-	3,706	1,112	4,818	4,818	-	-	-	-	-	-	-	-	-	-
1a.2	Subtotal Period 1a Additional Costs	-	-	-	-	-	-	3,706	1,112	4,818	4,818	-	-	-	-	-	-	-	-	-	-
Period 1a Collateral Costs																					
1a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	47,437	7,116	54,553	-	54,553	-	-	-	-	-	-	-	-	-
1a.3	Subtotal Period 1a Collateral Costs	-	-	-	-	-	-	47,437	7,116	54,553	-	54,553	-	-	-	-	-	-	-	-	-
Period 1a Period-Dependent Costs																					
1a.4.1	Insurance	-	-	-	-	-	-	857	86	943	943	-	-	-	-	-	-	-	-	-	-
1a.4.2	Property taxes	-	-	-	-	-	-	7	1	7	7	-	-	-	-	-	-	-	-	-	-
1a.4.3	Health physics supplies	-	347	-	-	-	-	-	87	433	433	-	-	-	-	-	-	-	-	-	-
1a.4.4	Heavy equipment rental	-	338	-	-	-	-	-	51	389	389	-	-	-	-	-	-	-	-	-	-
1a.4.5	Disposal of DAW generated	-	-	11	10	-	45	-	14	79	79	-	-	-	610	-	-	-	12,190	20	-

Table D-2
Vermont Yankee Nuclear Power Station
Scenario 4: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 1a Period-Dependent Costs (continued)																					
1a.4.6	Plant energy budget	-	-	-	-	-	-	1,173	176	1,349	1,349	-	-	-	-	-	-	-	-	-	-
1a.4.7	NRC Fees	-	-	-	-	-	-	1,036	104	1,140	1,140	-	-	-	-	-	-	-	-	-	-
1a.4.8	Emergency Planning Fees	-	-	-	-	-	-	4,660	466	5,126	-	5,126	-	-	-	-	-	-	-	-	-
1a.4.9	Site O&M	-	-	-	-	-	-	208	31	239	239	-	-	-	-	-	-	-	-	-	-
1a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	763	114	878	-	878	-	-	-	-	-	-	-	-	-
1a.4.11	ISFSI Operating Costs	-	-	-	-	-	-	89	13	103	-	103	-	-	-	-	-	-	-	-	-
1a.4.12	Corporate A&G	-	-	-	-	-	-	8,708	1,306	10,014	10,014	-	-	-	-	-	-	-	-	-	-
1a.4.13	Security Staff Cost	-	-	-	-	-	-	5,356	803	6,159	6,159	-	-	-	-	-	-	-	-	-	157,471
1a.4.14	Utility Staff Cost	-	-	-	-	-	-	24,094	3,614	27,708	27,708	-	-	-	-	-	-	-	-	-	423,400
1a.4	Subtotal Period 1a Period-Dependent Costs	-	685	11	10	-	45	46,950	6,866	54,567	48,461	6,106	-	-	610	-	-	-	12,190	20	580,871
1a.0	TOTAL PERIOD 1a COST	-	685	11	10	-	45	112,295	17,223	130,269	69,110	60,659	501	-	610	-	-	-	12,190	20	659,480
PERIOD 1b - Decommissioning Preparations																					
Period 1b Direct Decommissioning Activities																					
Detailed Work Procedures																					
1b.1.1.1	Plant systems	-	-	-	-	-	-	554	83	637	573	-	64	-	-	-	-	-	-	-	4,733
1b.1.1.2	NSSS Decontamination Flush	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.3	Reactor internals	-	-	-	-	-	-	468	70	538	538	-	-	-	-	-	-	-	-	-	4,000
1b.1.1.4	Remaining buildings	-	-	-	-	-	-	158	24	182	45	-	136	-	-	-	-	-	-	-	1,350
1b.1.1.5	CRD housings & NIs	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.6	Incore instrumentation	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.7	Removal primary containment	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1b.1.1.8	Reactor vessel	-	-	-	-	-	-	425	64	489	489	-	-	-	-	-	-	-	-	-	3,630
1b.1.1.9	Facility closeout	-	-	-	-	-	-	140	21	162	81	-	81	-	-	-	-	-	-	-	1,200
1b.1.1.10	Sacrificial shield	-	-	-	-	-	-	140	21	162	162	-	-	-	-	-	-	-	-	-	1,200
1b.1.1.11	Reinforced concrete	-	-	-	-	-	-	117	18	135	67	-	67	-	-	-	-	-	-	-	1,000
1b.1.1.12	Main Turbine	-	-	-	-	-	-	243	37	280	280	-	-	-	-	-	-	-	-	-	2,080
1b.1.1.13	Main Condensers	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
1b.1.1.14	Moisture separators & reheaters	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1b.1.1.15	Radwaste building	-	-	-	-	-	-	320	48	367	331	-	37	-	-	-	-	-	-	-	2,730
1b.1.1.16	Reactor building	-	-	-	-	-	-	320	48	367	331	-	37	-	-	-	-	-	-	-	2,730
1b.1.1	Total	-	-	-	-	-	-	3,949	592	4,542	4,120	-	422	-	-	-	-	-	-	-	33,741
1b.1.2	Decon NSSS	522	-	-	-	-	-	-	261	783	783	-	-	-	-	-	-	-	-	1,067	-
1b.1	Subtotal Period 1b Activity Costs	522	-	-	-	-	-	3,949	854	5,325	4,904	-	422	-	-	-	-	-	-	1,067	33,741
Period 1b Additional Costs																					
1b.2.1	Spent Fuel Pool Isolation	-	-	-	-	-	-	10,280	1,542	11,822	11,822	-	-	-	-	-	-	-	-	-	-
1b.2.2	Asbestos Remediation	-	1,644	30	177	-	602	67	601	3,121	3,121	-	-	-	9,938	-	-	-	129,188	13,287	-
1b.2.3	Operational Waste	406	-	139	1,052	-	1,045	-	636	3,277	3,277	-	-	-	2,600	-	-	-	156,000	507	-
1b.2.4	Hazardous Waste	-	-	197	95	1,692	-	-	288	2,271	2,271	-	-	3,288	-	-	-	-	354,266	1,619	-
1b.2	Subtotal Period 1b Additional Costs	406	1,644	366	1,323	1,692	1,647	10,347	3,067	20,491	20,491	-	-	3,288	12,538	-	-	-	639,454	15,413	-
Period 1b Collateral Costs																					
1b.3.1	Decon equipment	667	-	-	-	-	-	-	100	767	767	-	-	-	-	-	-	-	-	-	-
1b.3.2	DOC staff relocation expenses	-	-	-	-	-	-	1,030	154	1,184	1,184	-	-	-	-	-	-	-	-	-	-
1b.3.3	Process decommissioning water waste	53	-	18	135	-	134	-	82	421	421	-	-	-	333	-	-	-	20,004	65	-
1b.3.4	Process decommissioning chemical flush waste	2	-	44	404	-	860	-	281	1,591	1,591	-	-	-	-	859	-	-	91,583	161	-
1b.3.5	Small tool allowance	-	21	-	-	-	-	-	3	24	24	-	-	-	-	-	-	-	-	-	-
1b.3.6	Pipe cutting equipment	-	1,100	-	-	-	-	-	165	1,265	1,265	-	-	-	-	-	-	-	-	-	-
1b.3.7	Decon rig	1,500	-	-	-	-	-	-	225	1,725	1,725	-	-	-	-	-	-	-	-	-	-
1b.3.8	Spent Fuel Capital and Transfer	-	-	-	-	-	-	4,743	711	5,455	-	5,455	-	-	-	-	-	-	-	-	-
1b.3	Subtotal Period 1b Collateral Costs	2,221	1,121	62	539	-	994	5,773	1,722	12,432	6,977	5,455	-	-	333	859	-	-	111,587	226	-
Period 1b Period-Dependent Costs																					
1b.4.1	Decon supplies	21	-	-	-	-	-	-	5	26	26	-	-	-	-	-	-	-	-	-	-
1b.4.2	Insurance	-	-	-	-	-	-	212	21	233	233	-	-	-	-	-	-	-	-	-	-

Table D-2
Vermont Yankee Nuclear Power Station
Scenario 4: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 1b Period-Dependent Costs (continued)																					
1b.4.3	Property taxes	-	-	-	-	-	-	3	0	4	4	-	-	-	-	-	-	-	-	-	-
1b.4.4	Health physics supplies	-	247	-	-	-	-	-	62	308	308	-	-	-	-	-	-	-	-	-	-
1b.4.5	Heavy equipment rental	-	172	-	-	-	-	-	26	197	197	-	-	-	-	-	-	-	-	-	-
1b.4.6	Disposal of DAW generated	-	-	6	6	-	27	-	8	47	47	-	-	-	362	-	-	-	7,234	12	-
1b.4.7	Plant energy budget	-	-	-	-	-	-	1,189	178	1,367	1,367	-	-	-	-	-	-	-	-	-	-
1b.4.8	NRC Fees	-	-	-	-	-	-	294	29	324	324	-	-	-	-	-	-	-	-	-	-
1b.4.9	Emergency Planning Fees	-	-	-	-	-	-	2,076	208	2,283	-	2,283	-	-	-	-	-	-	-	-	-
1b.4.10	Site O&M	-	-	-	-	-	-	105	16	121	121	-	-	-	-	-	-	-	-	-	-
1b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	387	58	445	-	445	-	-	-	-	-	-	-	-	-
1b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	45	7	52	-	52	-	-	-	-	-	-	-	-	-
1b.4.13	Corporate A&G	-	-	-	-	-	-	2,192	329	2,521	2,521	-	-	-	-	-	-	-	-	-	-
1b.4.14	Security Staff Cost	-	-	-	-	-	-	2,714	407	3,122	3,122	-	-	-	-	-	-	-	-	-	79,814
1b.4.15	DOC Staff Cost	-	-	-	-	-	-	5,561	834	6,395	6,395	-	-	-	-	-	-	-	-	-	64,486
1b.4.16	Utility Staff Cost	-	-	-	-	-	-	12,280	1,842	14,122	14,122	-	-	-	-	-	-	-	-	-	215,657
1b.4	Subtotal Period 1b Period-Dependent Costs	21	418	6	6	-	27	27,060	4,030	31,568	28,788	2,780	-	-	362	-	-	-	7,234	12	359,957
1b.0	TOTAL PERIOD 1b COST	3,170	3,184	434	1,868	1,692	2,668	47,128	9,672	69,816	61,160	8,235	422	3,288	13,233	859	-	-	758,275	16,717	393,698
PERIOD 1 TOTALS		3,170	3,869	444	1,878	1,692	2,713	159,423	26,896	200,086	130,270	68,894	922	3,288	13,843	859	-	-	770,466	16,737	1,053,178
PERIOD 2a - Large Component Removal																					
Period 2a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
2a.1.1.1	Recirculation System Piping & Valves	99	75	20	48	-	370	-	170	782	782	-	-	-	1,216	-	-	-	139,051	3,141	-
2a.1.1.2	Recirculation Pumps & Motors	37	39	13	57	15	268	-	108	537	537	-	-	181	1,788	-	-	-	111,100	1,476	-
2a.1.1.3	CRDMs & NIs Removal	88	80	234	110	-	178	-	148	838	838	-	-	-	2,561	-	-	-	67,063	3,032	-
2a.1.1.4	Reactor Vessel Internals	110	3,004	9,070	2,467	-	15,346	313	12,912	43,221	43,221	-	-	-	501	1,247	918	-	268,455	35,533	1,553
2a.1.1.5	Reactor Vessel	60	6,665	2,064	1,403	-	3,052	313	7,468	21,024	21,024	-	-	-	12,171	-	-	-	1,287,001	35,533	1,553
2a.1.1	Totals	393	9,863	11,401	4,084	15	19,214	626	20,805	66,402	66,402	-	-	181	18,237	1,247	918	-	1,872,670	78,715	3,107
Removal of Major Equipment																					
2a.1.2	Main Turbine/Generator	-	233	1,128	579	4,133	449	-	990	7,512	7,512	-	-	63,343	1,984	-	-	-	3,019,086	4,185	-
2a.1.3	Main Condensers	-	505	633	325	2,320	252	-	649	4,684	4,684	-	-	35,551	1,114	-	-	-	1,694,457	8,942	-
Cascading Costs from Clean Building Demolition																					
2a.1.4.1	Reactor	-	701	-	-	-	-	-	105	806	806	-	-	-	-	-	-	-	-	8,238	-
2a.1.4.2	AOG	-	85	-	-	-	-	-	13	98	98	-	-	-	-	-	-	-	-	1,032	-
2a.1.4.3	Equipment Lock	-	4	-	-	-	-	-	1	5	5	-	-	-	-	-	-	-	-	55	-
2a.1.4.4	Misc Cont Yard Structures	-	9	-	-	-	-	-	1	10	10	-	-	-	-	-	-	-	-	114	-
2a.1.4.5	North Warehouse	-	1	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	16	-
2a.1.4.6	Radwaste	-	26	-	-	-	-	-	4	30	30	-	-	-	-	-	-	-	-	318	-
2a.1.4.7	Radwaste Compactor	-	0	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	4	-
2a.1.4.8	Turbine	-	237	-	-	-	-	-	36	273	273	-	-	-	-	-	-	-	-	2,999	-
2a.1.4.9	Vent Stack	-	0	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	5	-
2a.1.4	Totals	-	1,064	-	-	-	-	-	160	1,223	1,223	-	-	-	-	-	-	-	-	12,780	-
Reactor Building System Components																					
2a.1.5.1	RX-BLD-213-2_2	-	142	11	24	54	124	-	79	434	434	-	-	912	550	-	-	-	83,762	2,665	-
2a.1.5.2	RX-BLD-213-3_2	-	125	7	16	37	80	-	60	324	324	-	-	631	352	-	-	-	55,529	2,359	-
2a.1.5.3	RX-BLD-213-4_2	-	131	5	11	22	57	-	53	279	279	-	-	379	252	-	-	-	36,830	2,470	-
2a.1.5.4	RX-BLD-213-5_2	-	233	16	46	208	144	-	134	780	780	-	-	3,531	637	-	-	-	197,501	4,355	-
2a.1.5.5	RX-BLD-232-2_2	-	118	13	27	63	140	-	79	439	439	-	-	1,064	618	-	-	-	95,755	2,216	-
2a.1.5.6	RX-BLD-232-3_2	-	106	12	26	58	135	-	74	411	411	-	-	984	595	-	-	-	90,537	2,010	-
2a.1.5.7	RX-BLD-232-4_2	-	52	2	4	7	21	-	20	106	106	-	-	125	91	-	-	-	12,832	958	-
2a.1.5.8	RX-BLD-232-5_2	-	58	4	7	15	40	-	28	151	151	-	-	246	178	-	-	-	25,094	1,057	-
2a.1.5.9	RX-BLD-252-10_2	-	9	0	0	2	1	-	3	15	15	-	-	33	2	-	-	-	1,563	170	-
2a.1.5.10	RX-BLD-252-1_2	-	7	0	0	1	0	-	2	10	10	-	-	25	1	-	-	-	1,094	119	-
2a.1.5.11	RX-BLD-252-1_3	-	3	0	0	-	1	-	1	5	5	-	-	-	5	-	-	-	427	52	-

Table D-2
Vermont Yankee Nuclear Power Station
Scenario 4: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Reactor Building System Components (continued)																					
2a.1.5.12	RX-BLD-252-2_2	-	35	4	8	19	44	-	24	135	135	-	-	325	195	-	-	-	29,761	654	-
2a.1.5.13	RX-BLD-252-3_2	-	44	2	4	9	18	-	18	94	94	-	-	158	79	-	-	-	13,183	825	-
2a.1.5.14	RX-BLD-252-3_3	-	2	0	0	-	2	-	1	6	6	-	-	-	10	-	-	-	863	40	-
2a.1.5.15	RX-BLD-252-4_2	-	92	6	17	82	49	-	51	297	297	-	-	1,391	218	-	-	-	75,008	1,742	-
2a.1.5.16	RX-BLD-252-4_3	-	1	0	0	-	1	-	0	2	2	-	-	-	3	-	-	-	234	14	-
2a.1.5.17	RX-BLD-252-5_2	-	229	9	26	126	73	-	99	561	561	-	-	2,139	323	-	-	-	114,332	4,221	-
2a.1.5.18	RX-BLD-252-5_3	-	103	11	13	-	97	-	53	277	277	-	-	-	427	-	-	-	36,281	1,647	-
2a.1.5.19	RX-BLD-252-6_2	-	191	6	19	98	47	-	77	437	437	-	-	1,662	207	-	-	-	85,059	3,505	-
2a.1.5.20	RX-BLD-252-6_3	-	106	12	14	-	104	-	56	292	292	-	-	-	459	-	-	-	39,016	1,712	-
2a.1.5.21	RX-BLD-252-7_2	-	172	3	10	54	21	-	58	318	318	-	-	919	95	-	-	-	45,374	3,168	-
2a.1.5.22	RX-BLD-252-8_2	-	52	1	4	24	7	-	19	107	107	-	-	404	32	-	-	-	19,107	956	-
2a.1.5.23	RX-BLD-252-9_2	-	86	3	7	17	33	-	34	179	179	-	-	296	144	-	-	-	24,288	1,584	-
2a.1.5.24	RX-BLD-252-9_3	-	19	2	4	-	27	-	12	65	65	-	-	-	121	-	-	-	10,281	339	-
2a.1.5	Totals	-	2,116	129	285	897	1,265	-	1,035	5,727	5,727	-	-	15,225	5,595	-	-	-	1,093,710	38,837	-
Turbine Building System Components																					
2a.1.6.1	TURB-BLD-222-10_2	-	102	2	7	35	17	-	36	200	200	-	-	594	78	-	-	-	30,572	1,948	-
2a.1.6.2	TURB-BLD-222-11_2	-	60	1	4	18	13	-	22	118	118	-	-	313	58	-	-	-	17,682	1,117	-
2a.1.6.3	TURB-BLD-222-1_2	-	388	28	74	294	274	-	224	1,283	1,283	-	-	4,998	1,211	-	-	-	305,900	7,261	-
2a.1.6.4	TURB-BLD-222-2_2	-	302	32	85	345	305	-	219	1,287	1,287	-	-	5,861	1,347	-	-	-	352,511	5,632	-
2a.1.6.5	TURB-BLD-222-3_2	-	86	7	20	94	61	-	54	322	322	-	-	1,603	268	-	-	-	87,868	1,589	-
2a.1.6.6	TURB-BLD-222-8_2	-	248	8	20	72	80	-	97	525	525	-	-	1,229	353	-	-	-	79,944	4,695	-
2a.1.6.7	TURB-BLD-222-9_2	-	141	23	79	446	170	-	159	1,019	1,019	-	-	7,572	754	-	-	-	371,531	2,660	-
2a.1.6.8	TURB-BLD-228-12_2	-	200	5	14	53	55	-	74	402	402	-	-	906	242	-	-	-	57,336	3,712	-
2a.1.6.9	TURB-BLD-228-13_2	-	130	2	7	29	22	-	43	232	232	-	-	489	95	-	-	-	27,956	2,435	-
2a.1.6.10	TURB-BLD-228-1_2	-	124	6	16	67	53	-	57	324	324	-	-	1,146	240	-	-	-	66,617	2,290	-
2a.1.6.11	TURB-BLD-228-2_2	-	365	32	103	553	248	-	255	1,557	1,557	-	-	9,398	1,098	-	-	-	475,005	6,873	-
2a.1.6.12	TURB-BLD-228-3_2	-	310	24	61	194	266	-	185	1,039	1,039	-	-	3,295	1,178	-	-	-	233,901	5,829	-
2a.1.6.13	TURB-BLD-228-4_2	-	345	27	70	229	302	-	209	1,182	1,182	-	-	3,890	1,335	-	-	-	271,442	6,460	-
2a.1.6.14	TURB-BLD-228-5_2	-	163	17	42	120	196	-	116	653	653	-	-	2,037	866	-	-	-	156,261	3,032	-
2a.1.6.15	TURB-BLD-228-6_2	-	135	15	36	95	177	-	99	558	558	-	-	1,619	783	-	-	-	132,232	2,519	-
2a.1.6	Totals	-	3,099	230	637	2,647	2,238	-	1,850	10,700	10,700	-	-	44,949	9,905	-	-	-	2,666,759	58,053	-
Augmented Offgas Building System Components																					
2a.1.7.1	AOG-BLD-FL1-1_2	-	33	1	3	13	9	-	13	72	72	-	-	220	40	-	-	-	12,302	610	-
2a.1.7.2	AOG-BLD-FL1-2_2	-	100	4	14	93	18	-	46	274	274	-	-	1,577	91	-	-	-	70,749	1,850	-
2a.1.7.3	AOG-BLD-FL1-3_2	-	100	7	17	57	73	-	55	310	310	-	-	971	324	-	-	-	66,961	1,829	-
2a.1.7.4	AOG-BLD-FL1-4_2	-	106	6	14	46	58	-	51	280	280	-	-	783	258	-	-	-	53,731	1,909	-
2a.1.7.5	AOG-BLD-FL1-5_2	-	98	2	7	46	8	-	35	195	195	-	-	784	36	-	-	-	34,824	1,798	-
2a.1.7.6	AOG-BLD-FL2-1_2	-	65	5	11	37	45	-	35	197	197	-	-	622	199	-	-	-	42,146	1,194	-
2a.1.7.7	AOG-BLD-FL2-2_2	-	7	0	1	2	3	-	3	16	16	-	-	34	11	-	-	-	2,344	134	-
2a.1.7.8	AOG-BLD-FL2-3_2	-	7	0	1	2	2	-	3	15	15	-	-	33	11	-	-	-	2,242	129	-
2a.1.7.9	AOG-BLD-FL2-4_2	-	55	4	10	36	44	-	32	182	182	-	-	606	194	-	-	-	41,088	1,020	-
2a.1.7.10	AOG-BLD-FL2-5_2	-	7	0	0	1	2	-	2	13	13	-	-	15	8	-	-	-	1,293	133	-
2a.1.7.11	AOG-BLD-FL2-6_2	-	6	0	1	2	2	-	3	14	14	-	-	33	11	-	-	-	2,242	114	-
2a.1.7.12	AOG-BLD-FL2-7_2	-	30	1	2	6	9	-	11	59	59	-	-	106	38	-	-	-	7,531	541	-
2a.1.7.13	AOG-BLD-FL2-8_2	-	15	0	1	4	3	-	5	29	29	-	-	73	15	-	-	-	4,279	264	-
2a.1.7.14	AOG-BLD-FL2-9_2	-	95	5	15	84	36	-	48	283	283	-	-	1,423	164	-	-	-	71,186	1,724	-
2a.1.7.15	AOG-BLDG-1_2	-	48	3	5	9	31	-	22	118	118	-	-	158	136	-	-	-	17,994	865	-
2a.1.7.16	AOG-BLDG-2_2	-	168	2	3	4	21	-	48	246	246	-	-	74	98	-	-	-	10,723	2,485	-
2a.1.7.17	AOG-BLDG-PENT_2	-	34	1	3	18	8	-	14	78	78	-	-	314	34	-	-	-	15,642	607	-
2a.1.7.18	AOG-BLDG-RF_2	-	73	4	13	64	35	-	39	228	228	-	-	1,087	155	-	-	-	57,302	1,298	-
2a.1.7	Totals	-	1,047	46	121	525	406	-	465	2,609	2,609	-	-	8,914	1,824	-	-	-	514,582	18,504	-
2a.1.8	Scaffolding in support of decommissioning	-	593	25	13	86	9	-	168	894	894	-	-	1,312	146	-	-	-	65,595	11,723	-
2a.1	Subtotal Period 2a Activity Costs	393	18,519	13,593	6,045	10,621	23,832	626	26,122	99,750	99,750	-	-	169,475	38,805	1,247	918	-	10,926,860	231,741	3,107

Table D-2
Vermont Yankee Nuclear Power Station
Scenario 4: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2a Additional Costs																					
2a.2.1	Retired Low Presure Turbine Rotors	-	-	31	19	1,868	-	-	286	2,204	2,204	-	-	2,723	-	-	-	-	1,334,256	640	-
2a.2	Subtotal Period 2a Additional Costs	-	-	31	19	1,868	-	-	286	2,204	2,204	-	-	2,723	-	-	-	-	1,334,256	640	-
Period 2a Collateral Costs																					
2a.3.1	Process decommissioning water waste	96	-	33	250	-	248	-	151	778	778	-	-	-	617	-	-	-	37,048	120	-
2a.3.3	Small tool allowance	-	170	-	-	-	-	-	25	195	176	-	20	-	-	-	-	-	-	-	-
2a.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	9,531	1,430	10,960	-	10,960	-	-	-	-	-	-	-	-	-
2a.3	Subtotal Period 2a Collateral Costs	96	170	33	250	-	248	9,531	1,606	11,934	954	10,960	20	-	617	-	-	-	37,048	120	-
Period 2a Period-Dependent Costs																					
2a.4.1	Decon supplies	60	-	-	-	-	-	-	15	75	75	-	-	-	-	-	-	-	-	-	-
2a.4.2	Insurance	-	-	-	-	-	-	619	62	681	681	-	-	-	-	-	-	-	-	-	-
2a.4.3	Property taxes	-	-	-	-	-	-	10	1	11	10	-	1	-	-	-	-	-	-	-	-
2a.4.4	Health physics supplies	-	1,272	-	-	-	-	-	318	1,590	1,590	-	-	-	-	-	-	-	-	-	-
2a.4.5	Heavy equipment rental	-	2,183	-	-	-	-	-	327	2,511	2,511	-	-	-	-	-	-	-	-	-	-
2a.4.6	Disposal of DAW generated	-	-	74	69	-	317	-	97	556	556	-	-	-	4,266	-	-	-	85,330	139	-
2a.4.7	Plant energy budget	-	-	-	-	-	-	1,652	248	1,899	1,899	-	-	-	-	-	-	-	-	-	-
2a.4.8	NRC Fees	-	-	-	-	-	-	773	77	850	850	-	-	-	-	-	-	-	-	-	-
2a.4.9	Emergency Planning Fees	-	-	-	-	-	-	6,070	607	6,677	-	6,677	-	-	-	-	-	-	-	-	-
2a.4.10	Site O&M	-	-	-	-	-	-	308	46	354	354	-	-	-	-	-	-	-	-	-	-
2a.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	1,131	170	1,301	-	1,301	-	-	-	-	-	-	-	-	-
2a.4.12	ISFSI Operating Costs	-	-	-	-	-	-	133	20	152	-	152	-	-	-	-	-	-	-	-	-
2a.4.13	Corporate A&G	-	-	-	-	-	-	4,205	631	4,836	4,836	-	-	-	-	-	-	-	-	-	-
2a.4.14	Security Staff Cost	-	-	-	-	-	-	6,698	1,005	7,703	7,703	-	-	-	-	-	-	-	-	-	195,533
2a.4.15	DOC Staff Cost	-	-	-	-	-	-	20,184	3,028	23,212	23,212	-	-	-	-	-	-	-	-	-	234,949
2a.4.16	Utility Staff Cost	-	-	-	-	-	-	25,470	3,821	29,291	29,291	-	-	-	-	-	-	-	-	-	437,437
2a.4	Subtotal Period 2a Period-Dependent Costs	60	3,455	74	69	-	317	67,254	10,472	81,701	73,569	8,131	1	-	4,266	-	-	-	85,330	139	867,919
2a.0	TOTAL PERIOD 2a COST	549	22,144	13,730	6,382	12,489	24,397	77,411	38,486	195,588	176,477	19,091	21	172,198	43,689	1,247	918	-	12,383,490	232,640	871,025
PERIOD 2b - Site Decontamination																					
Reactor Building System Components																					
2b.1.1.1	RX-BLD-213-1_2	-	1,122	49	179	1,050	349	-	557	3,306	3,306	-	-	17,830	1,544	-	-	-	855,276	22,426	-
2b.1.1.2	RX-BLD-213-1_3	-	53	7	12	-	90	-	38	201	201	-	-	-	397	-	-	-	33,774	988	-
2b.1.1.3	RX-BLD-232-1_2	-	489	54	120	277	626	-	344	1,910	1,910	-	-	4,704	2,767	-	-	-	426,247	9,019	-
2b.1.1.4	RX-BLD-232-1_3	-	23	2	3	-	23	-	12	64	64	-	-	-	103	-	-	-	8,738	393	-
2b.1.1.5	RX-BLD-280-1_2	-	26	0	1	7	2	-	8	46	46	-	-	126	9	-	-	-	5,893	496	-
2b.1.1.6	RX-BLD-280-1_3	-	57	4	7	-	53	-	29	151	151	-	-	-	234	-	-	-	19,900	1,076	-
2b.1.1.7	RX-BLD-280-2_2	-	41	1	3	5	15	-	15	81	81	-	-	89	68	-	-	-	9,426	776	-
2b.1.1.8	RX-BLD-280-2_3	-	115	13	24	-	177	-	78	408	408	-	-	-	785	-	-	-	66,718	2,197	-
2b.1.1.9	RX-BLD-280-3_2	-	191	12	38	195	100	-	109	646	646	-	-	3,316	444	-	-	-	172,355	3,486	-
2b.1.1.10	RX-BLD-280-4_2	-	79	2	6	33	16	-	30	167	167	-	-	562	71	-	-	-	28,869	1,435	-
2b.1.1.11	RX-BLD-280-5_2	-	161	4	12	60	35	-	60	332	332	-	-	1,018	154	-	-	-	54,392	2,951	-
2b.1.1.12	RX-BLD-280-6_2	-	175	3	12	67	25	-	62	344	344	-	-	1,133	109	-	-	-	55,300	3,223	-
2b.1.1.13	RX-BLD-280-7_2	-	142	6	22	131	39	-	69	409	409	-	-	2,221	172	-	-	-	104,792	2,596	-
2b.1.1.14	RX-BLD-280-ROOF_2	-	26	6	14	72	38	-	29	184	184	-	-	1,216	166	-	-	-	63,490	489	-
2b.1.1.15	RX-BLD-303-1_2	-	46	2	4	12	18	-	18	100	100	-	-	201	80	-	-	-	14,964	875	-
2b.1.1.16	RX-BLD-303-1_3	-	156	25	40	-	295	-	121	638	638	-	-	-	1,307	-	-	-	111,075	2,933	-
2b.1.1.17	RX-BLD-303-2_3	-	82	7	10	-	72	-	41	211	211	-	-	-	381	-	-	-	26,893	1,552	-
2b.1.1.18	RX-BLD-303-3_3	-	23	1	1	-	10	-	9	45	45	-	-	-	45	-	-	-	3,831	442	-
2b.1.1.19	RX-BLD-303-4_2	-	191	12	32	138	111	-	102	588	588	-	-	2,347	492	-	-	-	137,091	3,461	-
2b.1.1.20	RX-BLD-303-5_2	-	20	0	1	6	3	-	7	36	36	-	-	95	11	-	-	-	4,799	376	-
2b.1.1.21	RX-BLD-303-6_2	-	11	0	0	3	1	-	4	19	19	-	-	46	5	-	-	-	2,310	210	-
2b.1.1.22	RX-BLD-303-7_2	-	82	4	11	53	33	-	39	222	222	-	-	905	147	-	-	-	49,224	1,515	-
2b.1.1.23	RX-BLD-303-7_3	-	21	3	5	-	35	-	15	79	79	-	-	-	157	-	-	-	13,334	364	-
2b.1.1.24	RX-BLD-303-8_2	-	73	2	7	32	19	-	29	162	162	-	-	542	84	-	-	-	29,154	1,304	-
2b.1.1.25	RX-BLD-318-1_3	-	25	1	2	-	12	-	10	49	49	-	-	-	60	-	-	-	4,371	479	-
2b.1.1.26	RX-BLD-318-2_3	-	39	3	3	-	24	-	16	85	85	-	-	-	106	-	-	-	9,021	698	-
2b.1.1.27	RX-BLD-318-3_3	-	29	2	3	-	21	-	13	67	67	-	-	-	92	-	-	-	7,792	531	-

Table D-2
Vermont Yankee Nuclear Power Station
Scenario 4: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Reactor Building System Components (continued)																					
2b.1.1.28	RX-BLD-318-4_2	-	512	10	48	335	42	-	197	1,143	1,143	-	-	5,692	184	-	-	-	246,806	9,443	-
2b.1.1.29	RX-BLD-318-4_3	-	13	1	2	-	15	-	7	39	39	-	-	-	66	-	-	-	5,636	221	-
2b.1.1.30	RX-BLD-318-5_2	-	90	4	11	62	26	-	40	233	233	-	-	1,045	118	-	-	-	52,319	1,631	-
2b.1.1.31	RX-BLD-318-6_2	-	49	1	4	21	7	-	18	99	99	-	-	350	32	-	-	-	16,898	835	-
2b.1.1.32	RX-BLD-318-7_2	-	40	2	5	22	16	-	18	102	102	-	-	374	70	-	-	-	21,101	725	-
2b.1.1.33	RX-BLD-345-1_3	-	398	1	1	-	7	-	102	509	509	-	-	-	31	-	-	-	2,619	7,779	-
2b.1.1.34	RX-BLD-345-2_3	-	280	0	0	-	2	-	70	352	352	-	-	-	7	-	-	-	631	5,471	-
2b.1.1.35	RX-BLD-345-3_2	-	612	0	1	8	2	-	155	779	779	-	-	136	9	-	-	-	6,249	11,955	-
2b.1.1.36	RX-BLD-345-3_3	-	7	1	1	-	7	-	4	20	20	-	-	-	32	-	-	-	2,760	142	-
2b.1.1.37	RX-BLD-345-4_2	-	5	0	0	0	1	-	1	7	7	-	-	2	4	-	-	-	416	91	-
2b.1.1.38	RX-BLD-345-5_2	-	47	2	5	24	15	-	20	113	113	-	-	410	67	-	-	-	22,378	846	-
2b.1.1.39	RX-BLD-345-6_2	-	60	2	4	18	15	-	22	121	121	-	-	298	68	-	-	-	17,914	1,110	-
2b.1.1.40	RX-BLD-345-7_2	-	35	1	4	22	8	-	15	85	85	-	-	368	36	-	-	-	17,962	639	-
2b.1.1.41	RX-BLD-345-8_2	-	37	1	3	15	8	-	14	78	78	-	-	261	35	-	-	-	13,578	654	-
2b.1.1.42	RX-BLD-DW_2	-	317	13	29	75	145	-	133	713	713	-	-	1,281	643	-	-	-	106,657	6,017	-
2b.1.1.43	RX-BLD-DW_3	-	561	129	197	-	1,446	-	544	2,877	2,877	-	-	-	6,396	-	-	-	543,518	10,449	-
2b.1.1	Totals	-	6,562	395	890	2,742	4,004	-	3,226	17,819	17,819	-	-	46,568	17,789	-	-	-	3,396,472	124,301	-
Turbine Building System Components																					
2b.1.2.1	TURB-BLD-232-1_2	-	134	3	12	68	25	-	52	295	295	-	-	1,155	118	-	-	-	56,395	2,535	-
2b.1.2.2	TURB-BLD-232-2_2	-	238	10	23	87	88	-	99	545	545	-	-	1,475	390	-	-	-	93,005	4,392	-
2b.1.2.3	TURB-BLD-232-3_2	-	143	4	10	39	38	-	53	287	287	-	-	667	168	-	-	-	41,247	2,632	-
2b.1.2.4	TURB-BLD-232-4_2	-	112	4	7	26	31	-	41	221	221	-	-	438	138	-	-	-	29,531	2,046	-
2b.1.2.5	TURB-BLD-232-5_2	-	150	5	12	49	43	-	58	317	317	-	-	829	188	-	-	-	49,641	2,784	-
2b.1.2.6	TURB-BLD-232-6_2	-	174	4	11	49	36	-	62	335	335	-	-	825	158	-	-	-	46,921	3,210	-
2b.1.2.7	TURB-BLD-232-7_2	-	117	3	8	30	29	-	42	229	229	-	-	518	127	-	-	-	31,755	2,161	-
2b.1.2.8	TURB-BLD-246-1_2	-	130	9	23	87	92	-	73	415	415	-	-	1,478	407	-	-	-	94,622	2,440	-
2b.1.2.9	TURB-BLD-248-1_2	-	110	6	16	63	58	-	54	307	307	-	-	1,064	259	-	-	-	65,067	2,059	-
2b.1.2.10	TURB-BLD-248-2_2	-	246	1	6	42	7	-	71	374	374	-	-	714	33	-	-	-	31,819	4,744	-
2b.1.2.11	TURB-BLD-248-3_2	-	287	27	72	249	298	-	197	1,129	1,129	-	-	4,220	1,317	-	-	-	283,335	5,367	-
2b.1.2.12	TURB-BLD-248-4_2	-	198	22	56	180	248	-	149	855	855	-	-	3,062	1,099	-	-	-	217,723	3,718	-
2b.1.2.13	TURB-BLD-248-5_2	-	51	3	7	33	23	-	25	141	141	-	-	555	101	-	-	-	31,175	940	-
2b.1.2.14	TURB-BLD-248-6_2	-	115	4	12	64	30	-	48	273	273	-	-	1,094	134	-	-	-	55,778	2,121	-
2b.1.2.15	TURB-BLD-248-7_2	-	71	5	15	72	42	-	42	246	246	-	-	1,220	187	-	-	-	65,408	1,313	-
2b.1.2.16	TURB-BLD-252-10_2	-	141	3	8	41	24	-	49	266	266	-	-	694	108	-	-	-	37,406	2,663	-
2b.1.2.17	TURB-BLD-252-13_2	-	123	1	5	33	7	-	39	209	209	-	-	567	32	-	-	-	25,746	2,254	-
2b.1.2.18	TURB-BLD-252-14_2	-	91	3	7	28	25	-	34	187	187	-	-	468	109	-	-	-	28,329	1,680	-
2b.1.2.19	TURB-BLD-252-1_2	-	89	6	21	120	45	-	55	338	338	-	-	2,043	200	-	-	-	99,951	1,614	-
2b.1.2.20	TURB-BLD-252-2_2	-	87	6	21	117	45	-	54	331	331	-	-	1,995	200	-	-	-	98,015	1,589	-
2b.1.2.21	TURB-BLD-252-3_2	-	21	1	2	10	3	-	8	44	44	-	-	168	16	-	-	-	8,128	381	-
2b.1.2.22	TURB-BLD-252-4_2	-	26	0	1	5	1	-	8	40	40	-	-	78	3	-	-	-	3,408	504	-
2b.1.2.23	TURB-BLD-252-5_2	-	178	3	9	48	26	-	60	324	324	-	-	808	115	-	-	-	42,556	3,378	-
2b.1.2.24	TURB-BLD-252-6_2	-	63	0	1	5	2	-	17	88	88	-	-	77	11	-	-	-	4,015	1,202	-
2b.1.2.25	TURB-BLD-252-7_2	-	73	6	18	81	55	-	47	281	281	-	-	1,379	245	-	-	-	76,729	1,202	-
2b.1.2.26	TURB-BLD-252-8_2	-	25	1	2	11	7	-	10	56	56	-	-	185	30	-	-	-	10,050	423	-
2b.1.2.27	TURB-BLD-252-9_2	-	104	5	18	108	32	-	54	321	321	-	-	1,829	155	-	-	-	86,470	1,744	-
2b.1.2.28	TURB-BLD-272-1_2	-	27	2	6	39	11	-	16	101	101	-	-	660	48	-	-	-	30,908	505	-
2b.1.2.29	TURB-BLD-272-3_2	-	324	8	23	114	62	-	118	648	648	-	-	1,934	275	-	-	-	101,883	5,830	-
2b.1.2.30	TURB-BLD-272-4_2	-	68	4	15	95	26	-	40	248	248	-	-	1,612	119	-	-	-	75,176	1,106	-
2b.1.2.31	TURB-BLD-272-5_2	-	51	3	10	62	18	-	28	173	173	-	-	1,048	82	-	-	-	49,498	779	-
2b.1.2.32	TURB-BLD-272-6_2	-	70	4	16	91	30	-	41	252	252	-	-	1,546	133	-	-	-	74,075	1,069	-
2b.1.2.33	TURB-BLD-272-9_0	-	12	-	-	-	-	-	2	13	-	-	13	-	-	-	-	-	-	212	-
2b.1.2	Totals	-	3,845	168	474	2,144	1,509	-	1,747	9,887	9,874	-	13	36,406	6,703	-	-	-	2,045,767	70,597	-
Control/Radwaste/Other Building System Components																					
2b.1.3.1	CONT-BLD-248-1_0	-	144	-	-	-	-	-	22	165	-	-	165	-	-	-	-	-	-	2,578	-
2b.1.3.2	CONT-BLD-248-1_2	-	1	0	0	0	1	-	0	3	3	-	-	2	4	-	-	-	413	10	-
2b.1.3.3	CONT-BLD-248-2_0	-	4	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	74	-
2b.1.3.4	CONT-BLD-262-1_0	-	110	-	-	-	-	-	16	126	-	-	126	-	-	-	-	-	-	1,974	-
2b.1.3.5	CONT-BLD-272-1_0	-	48	-	-	-	-	-	7	55	-	-	55	-	-	-	-	-	-	874	-

Table D-2
Vermont Yankee Nuclear Power Station
Scenario 4: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Control/Radwaste/Other Building System Components (continued)																					
2b.1.3.6	CST-BASE-TRENCH_2	-	349	14	53	325	91	-	168	1,001	1,001	-	-	5,526	439	-	-	-	258,479	6,408	-
2b.1.3.7	CT_0	-	205	-	-	-	-	-	31	236	-	-	236	-	-	-	-	-	-	3,726	-
2b.1.3.8	DISCHARGE-STR_0	-	61	-	-	-	-	-	9	70	-	-	70	-	-	-	-	-	-	1,111	-
2b.1.3.9	DST-BASE_0	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	367	-
2b.1.3.10	INTAKE-STR_0	-	148	-	-	-	-	-	22	170	-	-	170	-	-	-	-	-	-	2,675	-
2b.1.3.11	NORTH-WAREHOUSE_2	-	26	0	1	8	3	-	9	49	49	-	-	138	14	-	-	-	6,830	477	-
2b.1.3.12	RW-BLD-230-1_3	-	107	12	18	-	133	-	64	334	334	-	-	-	721	-	-	-	50,021	2,008	-
2b.1.3.13	RW-BLD-230-2_3	-	139	18	26	-	191	-	88	463	463	-	-	-	1,051	-	-	-	71,955	2,623	-
2b.1.3.14	RW-BLD-230-3_3	-	61	5	7	-	51	-	30	153	153	-	-	-	238	-	-	-	19,202	1,132	-
2b.1.3.15	RW-BLD-230-4_3	-	43	4	6	-	46	-	23	122	122	-	-	-	249	-	-	-	17,241	803	-
2b.1.3.16	RW-BLD-230-5_3	-	33	3	4	-	32	-	17	90	90	-	-	-	171	-	-	-	12,002	629	-
2b.1.3.17	RW-BLD-230-7_3	-	150	12	18	-	134	-	75	389	389	-	-	-	594	-	-	-	50,458	2,676	-
2b.1.3.18	RW-BLD-246-8_2	-	45	2	4	3	23	-	18	95	95	-	-	49	103	-	-	-	10,721	825	-
2b.1.3.19	RW-BLD-252-10_2	-	13	0	0	3	1	-	4	21	21	-	-	44	4	-	-	-	2,137	257	-
2b.1.3.20	RW-BLD-252-11_2	-	12	0	1	5	3	-	5	27	27	-	-	93	14	-	-	-	5,004	223	-
2b.1.3.21	RW-BLD-252-12_2	-	94	3	10	63	13	-	38	221	221	-	-	1,070	67	-	-	-	48,427	1,712	-
2b.1.3.22	RW-BLD-252-13_2	-	77	4	9	38	30	-	34	191	191	-	-	642	165	-	-	-	37,276	1,404	-
2b.1.3.23	RW-BLD-252-1_2	-	63	1	2	16	2	-	19	103	103	-	-	264	11	-	-	-	11,618	1,203	-
2b.1.3.24	RW-BLD-252-2_2	-	35	2	5	13	25	-	18	99	99	-	-	229	111	-	-	-	18,743	667	-
2b.1.3.25	RW-BLD-252-3_2	-	15	0	1	4	2	-	5	27	27	-	-	72	7	-	-	-	3,569	283	-
2b.1.3.26	RW-BLD-252-4_2	-	25	0	1	7	4	-	9	46	46	-	-	116	18	-	-	-	6,246	481	-
2b.1.3.27	RW-BLD-252-5_2	-	37	1	3	15	12	-	15	83	83	-	-	256	52	-	-	-	14,774	669	-
2b.1.3.28	RW-BLD-252-6_3	-	73	8	10	-	75	-	39	205	205	-	-	-	331	-	-	-	28,118	1,345	-
2b.1.3.29	RW-BLD-252-7_3	-	26	2	3	-	23	-	13	68	68	-	-	-	123	-	-	-	8,810	501	-
2b.1.3.30	RW-BLD-252-8_2	-	43	2	4	7	22	-	18	96	96	-	-	119	96	-	-	-	12,983	789	-
2b.1.3.31	RW-BLD-252-9_3	-	50	3	5	-	37	-	23	118	118	-	-	-	182	-	-	-	13,871	932	-
2b.1.3.32	RW-BLD-264-1_2	-	4	0	0	0	0	-	1	5	5	-	-	2	0	-	-	-	86	78	-
2b.1.3.33	RW-BLD-264-2_2	-	5	0	0	1	0	-	1	7	7	-	-	11	0	-	-	-	457	100	-
2b.1.3.34	RW-BLD-264-RF_2	-	16	0	1	6	5	-	6	35	35	-	-	106	20	-	-	-	6,024	306	-
2b.1.3.35	RW-BLD-280-1_2	-	11	0	1	6	4	-	5	29	29	-	-	109	18	-	-	-	5,937	220	-
2b.1.3.36	RW-BLD-280-2_2	-	9	0	0	1	1	-	3	13	13	-	-	20	3	-	-	-	1,114	166	-
2b.1.3.37	SERV-BLD-248-1_2	-	68	1	4	20	12	-	24	129	129	-	-	345	51	-	-	-	18,363	1,265	-
2b.1.3.38	STACK_2	-	64	2	6	26	17	-	25	140	140	-	-	441	77	-	-	-	24,457	1,150	-
2b.1.3.39	YARD-252-CONT_2	-	557	112	261	631	1,337	-	619	3,517	3,517	-	-	10,709	5,912	-	-	-	937,443	10,334	-
2b.1.3.40	YARD-252-CONT_3	-	46	4	6	-	44	-	24	124	124	-	-	-	195	-	-	-	16,564	750	-
2b.1.3.41	YARD-252_0	-	297	-	-	-	-	-	45	342	-	-	342	-	-	-	-	-	-	5,517	-
2b.1.3	Totals	-	3,336	219	474	1,199	2,374	-	1,597	9,198	8,005	-	1,193	20,363	11,042	-	-	-	1,719,343	61,320	-
2b.1.4	Scaffolding in support of decommissioning	-	890	38	20	128	13	-	252	1,340	1,340	-	-	1,968	219	-	-	-	98,393	17,585	-
Decontamination of Site Buildings																					
2b.1.5.1	Reactor	2,238	1,308	135	500	2,968	339	-	2,065	9,553	9,553	-	-	50,400	6,064	-	-	-	2,472,533	58,193	-
2b.1.5.2	AOG	103	97	2	34	1	50	-	93	380	380	-	-	23	947	-	-	-	82,946	3,122	-
2b.1.5.3	Control	1	2	0	1	-	1	-	1	5	5	-	-	-	18	-	-	-	1,566	36	-
2b.1.5.4	Equipment Lock	7	2	0	3	-	5	-	6	23	23	-	-	-	86	-	-	-	7,410	145	-
2b.1.5.5	LLRW	1	-	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	11	-
2b.1.5.6	Misc Cont Yard Structures	107	195	3	58	-	87	-	133	583	583	-	-	-	1,649	-	-	-	142,902	4,730	-
2b.1.5.7	North Warehouse	35	7	1	9	-	14	-	24	91	91	-	-	-	261	-	-	-	22,620	656	-
2b.1.5.8	Radwaste	80	144	4	52	3	79	-	104	465	465	-	-	44	1,481	-	-	-	128,442	3,482	-
2b.1.5.9	Radwaste Compactor	3	10	0	4	-	5	-	6	29	29	-	-	-	103	-	-	-	8,958	211	-
2b.1.5.10	Service	1	18	0	6	-	9	-	8	44	44	-	-	-	177	-	-	-	15,318	296	-
2b.1.5.11	Turbine	571	438	14	212	99	304	-	519	2,157	2,157	-	-	1,673	5,737	-	-	-	561,722	15,664	-
2b.1.5.12	Vent Stack	7	59	1	22	-	32	-	30	151	151	-	-	-	610	-	-	-	52,878	1,020	-
2b.1.5	Totals	3,155	2,280	160	900	3,070	925	-	2,990	13,481	13,481	-	-	52,139	17,133	-	-	-	3,497,295	87,566	-
2b.1	Subtotal Period 2b Activity Costs	3,155	16,913	979	2,758	9,284	8,826	-	9,811	51,726	50,519	-	1,206	157,444	52,887	-	-	-	10,757,270	361,368	-
Period 2b Additional Costs																					
2b.2.1	Remedial Action Support Surveys	-	-	-	-	-	-	3,043	913	3,955	3,955	-	-	-	-	-	-	-	-	20,800	-
2b.2.2	Soil Remediation	-	166	52	5,557	-	7,786	-	2,826	16,386	16,386	-	-	-	142,773	-	-	-	12,849,600	3,402	-

Table D-2
Vermont Yankee Nuclear Power Station
Scenario 4: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2b Additional Costs (continued)																					
2b.2.3	Underground Services Excavations	-	1,365	-	-	-	-	-	205	1,569	1,569	-	-	-	-	-	-	-	-	15,911	-
2b.2.4	Asbestos Remediation	-	1,082	3	138	-	602	-	-	1,826	1,826	-	-	-	9,938	-	-	-	129,188	13,287	-
2b.2.5	Septic Field Removal	-	-	-	-	-	-	1,724	259	1,983	1,983	-	-	-	-	-	-	-	-	-	-
2b.2	Subtotal Period 2b Additional Costs	-	2,612	55	5,696	-	8,388	4,767	4,203	25,720	25,720	-	-	-	152,711	-	-	-	12,978,790	53,400	-
Period 2b Collateral Costs																					
2b.3.1	Process decommissioning water waste	175	-	62	469	-	466	-	281	1,453	1,453	-	-	-	1,159	-	-	-	69,539	226	-
2b.3.3	Small tool allowance	-	282	-	-	-	-	-	42	324	324	-	-	-	-	-	-	-	-	-	-
2b.3.4	Decommissioning Equipment Disposition	-	-	115	73	392	41	-	91	711	711	-	-	6,000	667	-	-	-	300,000	88	-
2b.3.5	Spent Fuel Capital and Transfer	-	-	-	-	-	-	20,237	3,036	23,273	-	23,273	-	-	-	-	-	-	-	-	-
2b.3.6	On-site survey and release of 25.85 tons clean metallic waste	-	-	-	-	-	-	28	3	31	31	-	-	-	-	-	-	-	-	-	-
2b.3	Subtotal Period 2b Collateral Costs	175	282	177	542	392	506	20,266	3,453	25,793	2,520	23,273	-	6,000	1,826	-	-	-	369,539	314	-
Period 2b Period-Dependent Costs																					
2b.4.1	Decon supplies	1,479	-	-	-	-	-	-	370	1,849	1,849	-	-	-	-	-	-	-	-	-	-
2b.4.2	Insurance	-	-	-	-	-	-	1,049	105	1,154	1,154	-	-	-	-	-	-	-	-	-	-
2b.4.3	Property taxes	-	-	-	-	-	-	17	2	19	19	-	-	-	-	-	-	-	-	-	-
2b.4.4	Health physics supplies	-	2,211	-	-	-	-	-	553	2,763	2,763	-	-	-	-	-	-	-	-	-	-
2b.4.5	Heavy equipment rental	-	3,667	-	-	-	-	-	550	4,217	4,217	-	-	-	-	-	-	-	-	-	-
2b.4.6	Disposal of DAW generated	-	-	110	103	-	474	-	145	831	831	-	-	-	6,382	-	-	-	127,632	208	-
2b.4.7	Plant energy budget	-	-	-	-	-	-	2,208	331	2,539	2,539	-	-	-	-	-	-	-	-	-	-
2b.4.8	NRC Fees	-	-	-	-	-	-	1,308	131	1,439	1,439	-	-	-	-	-	-	-	-	-	-
2b.4.9	Emergency Planning Fees	-	-	-	-	-	-	10,278	1,028	11,306	-	11,306	-	-	-	-	-	-	-	-	-
2b.4.10	Site O&M	-	-	-	-	-	-	522	78	600	600	-	-	-	-	-	-	-	-	-	-
2b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	1,915	287	2,202	-	2,202	-	-	-	-	-	-	-	-	-
2b.4.12	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	486	73	559	559	-	-	-	-	-	-	-	-	-	-
2b.4.13	ISFSI Operating Costs	-	-	-	-	-	-	224	34	258	-	258	-	-	-	-	-	-	-	-	-
2b.4.14	Corporate A&G	-	-	-	-	-	-	4,036	605	4,641	4,641	-	-	-	-	-	-	-	-	-	-
2b.4.15	Security Staff Cost	-	-	-	-	-	-	11,341	1,701	13,043	13,043	-	-	-	-	-	-	-	-	-	331,069
2b.4.16	DOC Staff Cost	-	-	-	-	-	-	32,986	4,948	37,934	37,934	-	-	-	-	-	-	-	-	-	382,103
2b.4.17	Utility Staff Cost	-	-	-	-	-	-	41,417	6,213	47,629	47,629	-	-	-	-	-	-	-	-	-	709,246
2b.4	Subtotal Period 2b Period-Dependent Costs	1,479	5,877	110	103	-	474	107,788	17,153	132,983	119,217	13,767	-	-	6,382	-	-	-	127,632	208	1,422,417
2b.0	TOTAL PERIOD 2b COST	4,810	25,684	1,321	9,098	9,675	18,193	132,821	34,620	236,222	197,975	37,040	1,206	163,444	213,805	-	-	-	24,233,230	415,290	1,422,417
PERIOD 2d - Decontamination Following Wet Fuel Storage																					
Period 2d Direct Decommissioning Activities																					
2d.1.1	Remove spent fuel racks	611	67	132	260	-	1,908	-	852	3,830	3,830	-	-	-	8,439	-	-	-	717,311	1,332	-
Reactor Building System Components(SFP Area)																					
2d.1.2.1	RX-BLD-318-3_3	-	29	2	3	-	21	-	13	67	67	-	-	-	92	-	-	-	7,792	531	-
2d.1.2.2	RX-BLD-345-1_3	-	398	1	1	-	7	-	102	509	509	-	-	-	31	-	-	-	2,619	7,779	-
2d.1.2.3	RX-BLD-345-2_3	-	280	0	0	-	2	-	70	352	352	-	-	-	7	-	-	-	631	5,471	-
2d.1.2.4	RX-BLD-345-3_2	-	612	0	1	8	2	-	155	779	779	-	-	136	9	-	-	-	6,249	11,955	-
2d.1.2.5	RX-BLD-345-3_3	-	7	1	1	-	7	-	4	20	20	-	-	-	32	-	-	-	2,760	142	-
2d.1.2	Totals	-	1,327	4	6	8	39	-	344	1,727	1,727	-	-	136	171	-	-	-	20,051	25,877	-
Decontamination of Site Buildings																					
2d.1.5.1	Reactor (post fuel)	161	381	31	505	45	2,145	-	798	4,065	4,065	-	-	768	18,287	-	-	-	1,330,666	8,304	-
2d.1.5	Totals	161	381	31	505	45	2,145	-	798	4,065	4,065	-	-	768	18,287	-	-	-	1,330,666	8,304	-
2d.1.6	Scaffolding in support of decommissioning	-	148	6	3	21	2	-	42	223	223	-	-	328	36	-	-	-	16,399	2,931	-
2d.1	Subtotal Period 2d Activity Costs	773	1,923	172	774	75	4,094	-	2,035	9,846	9,846	-	-	1,232	26,934	-	-	-	2,084,426	38,444	-
Period 2d Collateral Costs																					
2d.3.1	Process decommissioning water waste	70	-	25	188	-	187	-	113	583	583	-	-	-	466	-	-	-	27,932	91	-
2d.3.3	Small tool allowance	-	35	-	-	-	-	-	5	40	40	-	-	-	-	-	-	-	-	-	-
2d.3.4	Decommissioning Equipment Disposition	-	-	115	73	392	41	-	91	711	711	-	-	6,000	667	-	-	-	300,000	88	-

Table D-2
Vermont Yankee Nuclear Power Station
Scenario 4: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
2d.3	Subtotal Period 2d Collateral Costs	70	35	140	262	392	228	-	209	1,334	1,334	-	-	6,000	1,132	-	-	-	327,932	179	-
Period 2d Period-Dependent Costs																					
2d.4.1	Decon supplies	91	-	-	-	-	-	-	23	113	113	-	-	-	-	-	-	-	-	-	-
2d.4.2	Insurance	-	-	-	-	-	-	219	22	241	241	-	-	-	-	-	-	-	-	-	-
2d.4.3	Property taxes	-	-	-	-	-	-	4	0	4	4	-	-	-	-	-	-	-	-	-	-
2d.4.4	Health physics supplies	-	289	-	-	-	-	-	72	361	361	-	-	-	-	-	-	-	-	-	-
2d.4.5	Heavy equipment rental	-	765	-	-	-	-	-	115	879	879	-	-	-	-	-	-	-	-	-	-
2d.4.6	Disposal of DAW generated	-	-	19	18	-	82	-	25	144	144	-	-	-	1,107	-	-	-	22,132	36	-
2d.4.7	Plant energy budget	-	-	-	-	-	-	246	37	282	282	-	-	-	-	-	-	-	-	-	-
2d.4.8	NRC Fees	-	-	-	-	-	-	262	26	288	288	-	-	-	-	-	-	-	-	-	-
2d.4.9	Emergency Planning Fees	-	-	-	-	-	-	189	19	208	-	208	-	-	-	-	-	-	-	-	-
2d.4.10	Site O&M	-	-	-	-	-	-	109	16	125	125	-	-	-	-	-	-	-	-	-	-
2d.4.11	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	203	30	233	233	-	-	-	-	-	-	-	-	-	-
2d.4.12	ISFSI Operating Costs	-	-	-	-	-	-	47	7	54	-	54	-	-	-	-	-	-	-	-	-
2d.4.13	Corporate A&G	-	-	-	-	-	-	624	94	718	718	-	-	-	-	-	-	-	-	-	-
2d.4.14	Security Staff Cost	-	-	-	-	-	-	1,293	194	1,487	1,487	-	-	-	-	-	-	-	-	-	36,290
2d.4.15	DOC Staff Cost	-	-	-	-	-	-	4,694	704	5,398	5,398	-	-	-	-	-	-	-	-	-	54,571
2d.4.16	Utility Staff Cost	-	-	-	-	-	-	6,351	953	7,304	7,304	-	-	-	-	-	-	-	-	-	104,231
2d.4	Subtotal Period 2d Period-Dependent Costs	91	1,053	19	18	-	82	14,240	2,337	17,840	17,578	262	-	-	1,107	-	-	-	22,132	36	195,093
2d.0	TOTAL PERIOD 2d COST	933	3,011	331	1,054	466	4,404	14,240	4,581	29,021	28,759	262	-	7,232	29,172	-	-	-	2,434,491	38,659	195,093
PERIOD 2f - License Termination																					
Period 2f Direct Decommissioning Activities																					
2f.1.1	ORISE confirmatory survey	-	-	-	-	-	-	149	45	194	194	-	-	-	-	-	-	-	-	-	-
2f.1.2	Terminate license									a											
2f.1	Subtotal Period 2f Activity Costs	-	-	-	-	-	-	149	45	194	194	-	-	-	-	-	-	-	-	-	-
Period 2f Additional Costs																					
2f.2.1	License Termination Survey	-	-	-	-	-	-	5,451	1,635	7,087	7,087	-	-	-	-	-	-	-	-	64,820	-
2f.2.2	Confirmation and Verification Survey	-	-	-	-	-	-	1,651	495	2,146	2,146	-	-	-	-	-	-	-	-	9,784	-
2f.2	Subtotal Period 2f Additional Costs	-	-	-	-	-	-	7,102	2,131	9,232	9,232	-	-	-	-	-	-	-	-	74,604	-
Period 2f Collateral Costs																					
2f.3.1	DOC staff relocation expenses	-	-	-	-	-	-	1,030	154	1,184	1,184	-	-	-	-	-	-	-	-	-	-
2f.3	Subtotal Period 2f Collateral Costs	-	-	-	-	-	-	1,030	154	1,184	1,184	-	-	-	-	-	-	-	-	-	-
Period 2f Period-Dependent Costs																					
2f.4.1	Insurance	-	-	-	-	-	-	289	29	317	317	-	-	-	-	-	-	-	-	-	-
2f.4.2	Property taxes	-	-	-	-	-	-	5	1	6	6	-	-	-	-	-	-	-	-	-	-
2f.4.3	Health physics supplies	-	449	-	-	-	-	-	112	561	561	-	-	-	-	-	-	-	-	-	-
2f.4.4	Disposal of DAW generated	-	-	6	6	-	26	-	8	45	45	-	-	-	348	-	-	-	6,968	11	-
2f.4.5	Plant energy budget	-	-	-	-	-	-	174	26	200	200	-	-	-	-	-	-	-	-	-	-
2f.4.6	NRC Fees	-	-	-	-	-	-	371	37	408	408	-	-	-	-	-	-	-	-	-	-
2f.4.7	Emergency Planning Fees	-	-	-	-	-	-	268	27	294	-	294	-	-	-	-	-	-	-	-	-
2f.4.8	Site O&M	-	-	-	-	-	-	154	23	177	177	-	-	-	-	-	-	-	-	-	-
2f.4.9	ISFSI Operating Costs	-	-	-	-	-	-	66	10	76	-	76	-	-	-	-	-	-	-	-	-
2f.4.10	Corporate A&G	-	-	-	-	-	-	727	109	836	836	-	-	-	-	-	-	-	-	-	-
2f.4.11	Security Staff Cost	-	-	-	-	-	-	1,790	269	2,059	2,059	-	-	-	-	-	-	-	-	-	50,143
2f.4.12	DOC Staff Cost	-	-	-	-	-	-	4,903	735	5,638	5,638	-	-	-	-	-	-	-	-	-	56,314
2f.4.13	Utility Staff Cost	-	-	-	-	-	-	5,177	777	5,954	5,954	-	-	-	-	-	-	-	-	-	79,457
2f.4	Subtotal Period 2f Period-Dependent Costs	-	449	6	6	-	26	13,922	2,162	16,570	16,200	370	-	-	348	-	-	-	6,968	11	185,914
2f.0	TOTAL PERIOD 2f COST	-	449	6	6	-	26	22,202	4,491	27,180	26,810	370	-	-	348	-	-	-	6,968	74,615	185,914
PERIOD 2 TOTALS		6,293	51,289	15,388	16,539	22,631	47,019	246,674	82,178	488,011	430,020	56,763	1,227	342,874	287,014	1,247	918	-	39,058,180	761,205	2,674,449

Table D-2
Vermont Yankee Nuclear Power Station
Scenario 4: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 3b - Site Restoration																					
Period 3b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
3b.1.1.1	Reactor	-	4,030	-	-	-	-	-	605	4,635	-	-	4,635	-	-	-	-	-	-	47,743	-
3b.1.1.2	AOG	-	1,617	-	-	-	-	-	243	1,859	-	-	1,859	-	-	-	-	-	-	19,704	-
3b.1.1.3	Bottle Storage Shed	-	6	-	-	-	-	-	1	7	-	-	7	-	-	-	-	-	-	81	-
3b.1.1.4	Construction Office	-	58	-	-	-	-	-	9	67	-	-	67	-	-	-	-	-	-	961	-
3b.1.1.5	Control	-	174	-	-	-	-	-	26	200	-	-	200	-	-	-	-	-	-	2,292	-
3b.1.1.6	Control Access	-	35	-	-	-	-	-	5	40	-	-	40	-	-	-	-	-	-	549	-
3b.1.1.7	Cooling Towers	-	1,857	-	-	-	-	-	279	2,136	-	-	2,136	-	-	-	-	-	-	30,896	-
3b.1.1.8	Discharge & Aerating Structures	-	207	-	-	-	-	-	31	238	-	-	238	-	-	-	-	-	-	1,615	-
3b.1.1.9	Equipment Lock	-	76	-	-	-	-	-	11	87	-	-	87	-	-	-	-	-	-	1,039	-
3b.1.1.10	Gatehouse 1	-	10	-	-	-	-	-	2	12	-	-	12	-	-	-	-	-	-	148	-
3b.1.1.11	Gatehouse 2	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	287	-
3b.1.1.12	Intake Structure	-	372	-	-	-	-	-	56	427	-	-	427	-	-	-	-	-	-	4,004	-
3b.1.1.13	LLRW	-	77	-	-	-	-	-	12	89	-	-	89	-	-	-	-	-	-	1,126	-
3b.1.1.14	Misc Cont Yard Structures	-	167	-	-	-	-	-	25	192	-	-	192	-	-	-	-	-	-	2,170	-
3b.1.1.15	Misc Yard Structures	-	501	-	-	-	-	-	75	576	-	-	576	-	-	-	-	-	-	6,685	-
3b.1.1.16	New Warehouse	-	257	-	-	-	-	-	39	296	-	-	296	-	-	-	-	-	-	4,052	-
3b.1.1.17	North Warehouse	-	56	-	-	-	-	-	8	64	-	-	64	-	-	-	-	-	-	649	-
3b.1.1.18	Office Area (Turbine Bldg)	-	102	-	-	-	-	-	15	117	-	-	117	-	-	-	-	-	-	1,530	-
3b.1.1.19	Piping and Excavations	-	967	-	-	-	-	-	145	1,112	-	-	1,112	-	-	-	-	-	-	4,877	-
3b.1.1.20	Radwaste	-	238	-	-	-	-	-	36	273	-	-	273	-	-	-	-	-	-	2,964	-
3b.1.1.21	Radwaste Compactor	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	70	-
3b.1.1.22	Security Modifications	-	518	-	-	-	-	-	78	596	-	-	596	-	-	-	-	-	-	4,901	-
3b.1.1.23	Service	-	62	-	-	-	-	-	9	71	-	-	71	-	-	-	-	-	-	949	-
3b.1.1.24	Turbine	-	2,318	-	-	-	-	-	348	2,665	-	-	2,665	-	-	-	-	-	-	30,292	-
3b.1.1.25	Turbine Pedestal	-	480	-	-	-	-	-	72	552	-	-	552	-	-	-	-	-	-	5,277	-
3b.1.1.26	Turbine Storage Facility	-	112	-	-	-	-	-	17	128	-	-	128	-	-	-	-	-	-	1,986	-
3b.1.1.27	Vent Stack	-	8	-	-	-	-	-	1	10	-	-	10	-	-	-	-	-	-	126	-
3b.1.1.28	Reactor (post fuel)	-	31	-	-	-	-	-	5	35	-	-	35	-	-	-	-	-	-	535	-
3b.1.1	Totals	-	14,361	-	-	-	-	-	2,154	16,515	-	-	16,515	-	-	-	-	-	-	177,509	-
Site Closeout Activities																					
3b.1.2	Grade & landscape site	-	457	-	-	-	-	-	69	526	-	-	526	-	-	-	-	-	-	1,052	-
3b.1.3	Final report to NRC	-	-	-	-	-	-	183	27	210	210	-	-	-	-	-	-	-	-	-	1,560
3b.1	Subtotal Period 3b Activity Costs	-	14,818	-	-	-	-	183	2,250	17,251	210	-	17,041	-	-	-	-	-	-	178,561	1,560
Period 3b Additional Costs																					
3b.2.1	Concrete Processing	-	435	-	313	-	-	567	197	1,512	-	-	1,512	-	-	-	-	-	-	2,402	-
3b.2.2	Intake & Discharge Cofferdams	-	621	-	-	-	-	-	93	714	-	-	714	-	-	-	-	-	-	6,400	-
3b.2.3	Backfill Underground Services Excavation	-	2,450	-	-	-	-	-	367	2,817	-	-	2,817	-	-	-	-	-	-	8,066	-
3b.2.4	Backfill Structures	-	1,931	-	-	-	-	-	290	2,220	-	-	2,220	-	-	-	-	-	-	6,358	-
3b.2	Subtotal Period 3b Additional Costs	-	5,436	-	313	-	-	567	947	7,263	-	-	7,263	-	-	-	-	-	-	23,226	-
Period 3b Collateral Costs																					
3b.3.1	Small tool allowance	-	155	-	-	-	-	-	23	178	-	-	178	-	-	-	-	-	-	-	-
3b.3.2	Site O&M	-	-	-	-	-	-	208	31	239	-	-	239	-	-	-	-	-	-	-	-
3b.3	Subtotal Period 3b Collateral Costs	-	155	-	-	-	-	208	54	418	-	-	418	-	-	-	-	-	-	-	-
Period 3b Period-Dependent Costs																					
3b.4.1	Insurance	-	-	-	-	-	-	586	59	644	-	644	-	-	-	-	-	-	-	-	-
3b.4.2	Property taxes	-	-	-	-	-	-	10	1	11	-	-	11	-	-	-	-	-	-	-	-
3b.4.3	Heavy equipment rental	-	3,144	-	-	-	-	-	472	3,615	-	-	3,615	-	-	-	-	-	-	-	-
3b.4.4	Plant energy budget	-	-	-	-	-	-	176	26	203	-	-	203	-	-	-	-	-	-	-	-
3b.4.5	NRC ISFSI Fees	-	-	-	-	-	-	295	-	295	-	295	-	-	-	-	-	-	-	-	-
3b.4.6	Emergency Planning Fees	-	-	-	-	-	-	543	54	597	-	597	-	-	-	-	-	-	-	-	-
3b.4.7	ISFSI Operating Costs	-	-	-	-	-	-	134	20	154	-	154	-	-	-	-	-	-	-	-	-
3b.4.8	Corporate A&G	-	-	-	-	-	-	508	76	584	-	-	584	-	-	-	-	-	-	-	-

Table D-2
Vermont Yankee Nuclear Power Station
Scenario 4: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 3b Period-Dependent Costs (continued)																					
3b.4.9	Security Staff Cost	-	-	-	-	-	-	3,633	545	4,178	0	3,510	669	-	-	-	-	-	-	-	101,771
3b.4.10	DOC Staff Cost	-	-	-	-	-	-	9,655	1,448	11,103	-	-	11,103	-	-	-	-	-	-	-	106,469
3b.4.11	Utility Staff Cost	-	-	-	-	-	-	5,528	829	6,357	0	1,526	4,832	-	-	-	-	-	-	-	85,331
3b.4	Subtotal Period 3b Period-Dependent Costs	-	3,144	-	-	-	-	21,068	3,531	27,743	0	6,726	21,016	-	-	-	-	-	-	-	293,571
3b.0	TOTAL PERIOD 3b COST	-	23,553	-	313	-	-	22,026	6,783	52,674	210	6,726	45,737	-	-	-	-	-	-	201,787	295,131
PERIOD 3c - Fuel Storage Operations/Shipping																					
Period 3c Direct Decommissioning Activities																					
Period 3c Collateral Costs																					
3c.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	13,498	2,025	15,523	-	15,523	-	-	-	-	-	-	-	-	-
3c.3	Subtotal Period 3c Collateral Costs	-	-	-	-	-	-	13,498	2,025	15,523	-	15,523	-	-	-	-	-	-	-	-	-
Period 3c Period-Dependent Costs																					
3c.4.1	Insurance	-	-	-	-	-	-	16,585	1,659	18,244	-	18,244	-	-	-	-	-	-	-	-	-
3c.4.2	Property taxes	-	-	-	-	-	-	289	29	318	-	318	-	-	-	-	-	-	-	-	-
3c.4.3	Plant energy budget	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3c.4.4	NRC ISFSI Fees	-	-	-	-	-	-	8,345	-	8,345	-	8,345	-	-	-	-	-	-	-	-	-
3c.4.5	Emergency Planning Fees	-	-	-	-	-	-	15,379	1,538	16,917	-	16,917	-	-	-	-	-	-	-	-	-
3c.4.6	Site O&M	-	-	-	-	-	-	8,836	1,325	10,162	-	10,162	-	-	-	-	-	-	-	-	-
3c.4.7	ISFSI Operating Costs	-	-	-	-	-	-	3,803	570	4,373	-	4,373	-	-	-	-	-	-	-	-	-
3c.4.8	Corporate A&G	-	-	-	-	-	-	9,312	1,397	10,709	-	10,709	-	-	-	-	-	-	-	-	-
3c.4.9	Security Staff Cost	-	-	-	-	-	-	86,915	13,037	99,952	-	99,952	-	-	-	-	-	-	-	-	2,394,051
3c.4.10	Utility Staff Cost	-	-	-	-	-	-	37,924	5,689	43,612	-	43,612	-	-	-	-	-	-	-	-	598,513
3c.4	Subtotal Period 3c Period-Dependent Costs	-	-	-	-	-	-	187,388	25,244	212,632	-	212,632	-	-	-	-	-	-	-	-	2,992,564
3c.0	TOTAL PERIOD 3c COST	-	-	-	-	-	-	200,886	27,268	228,154	-	228,154	-	-	-	-	-	-	-	-	2,992,564
PERIOD 3d - GTCC shipping																					
Period 3d Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
3d.1.1.1	Vessel & Internals GTCC Disposal	-	-	500	-	-	4,926	-	789	6,215	6,215	-	-	-	-	-	-	1,785	347,940	-	-
3d.1.1	Totals	-	-	500	-	-	4,926	-	789	6,215	6,215	-	-	-	-	-	-	1,785	347,940	-	-
3d.1	Subtotal Period 3d Activity Costs	-	-	500	-	-	4,926	-	789	6,215	6,215	-	-	-	-	-	-	1,785	347,940	-	-
Period 3d Period-Dependent Costs																					
3d.4.1	Insurance	-	-	-	-	-	-	15	1	16	-	16	-	-	-	-	-	-	-	-	-
3d.4.2	Property taxes	-	-	-	-	-	-	0	0	0	-	0	-	-	-	-	-	-	-	-	-
3d.4.3	Plant energy budget	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3d.4.4	NRC ISFSI Fees	-	-	-	-	-	-	8	-	8	-	8	-	-	-	-	-	-	-	-	-
3d.4.5	Emergency Planning Fees	-	-	-	-	-	-	14	1	15	-	15	-	-	-	-	-	-	-	-	-
3d.4.6	Site O&M	-	-	-	-	-	-	8	1	9	-	9	-	-	-	-	-	-	-	-	-
3d.4.7	ISFSI Operating Costs	-	-	-	-	-	-	3	1	4	-	4	-	-	-	-	-	-	-	-	-
3d.4.8	Corporate A&G	-	-	-	-	-	-	8	1	10	-	10	-	-	-	-	-	-	-	-	-
3d.4.9	Security Staff Cost	-	-	-	-	-	-	78	12	90	-	90	-	-	-	-	-	-	-	-	2,160
3d.4.10	Utility Staff Cost	-	-	-	-	-	-	34	5	39	-	39	-	-	-	-	-	-	-	-	540
3d.4	Subtotal Period 3d Period-Dependent Costs	-	-	-	-	-	-	169	23	192	-	192	-	-	-	-	-	-	-	-	2,700
3d.0	TOTAL PERIOD 3d COST	-	-	500	-	-	4,926	169	812	6,407	6,215	192	-	-	-	-	-	1,785	347,940	-	2,700

Table D-2
Vermont Yankee Nuclear Power Station
Scenario 4: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 3e - ISFSI Decontamination																					
Period 3e Direct Decommissioning Activities																					
Period 3e Additional Costs																					
3e.2.1	ISFSI License Termination	-	33	5	32	-	75	1,280	224	1,648	-	1,648	-	-	1,231	-	-	-	102,129	3,165	2,560
3e.2	Subtotal Period 3e Additional Costs	-	33	5	32	-	75	1,280	224	1,648	-	1,648	-	-	1,231	-	-	-	102,129	3,165	2,560
Period 3e Collateral Costs																					
3e.3.1	Small tool allowance	-	0	-	-	-	-	-	0	0	-	0	-	-	-	-	-	-	-	-	-
3e.3	Subtotal Period 3e Collateral Costs	-	0	-	-	-	-	-	0	0	-	0	-	-	-	-	-	-	-	-	-
Period 3e Period-Dependent Costs																					
3e.4.1	Insurance	-	-	-	-	-	-	129	13	142	-	142	-	-	-	-	-	-	-	-	-
3e.4.2	Property taxes	-	-	-	-	-	-	2	0	2	-	2	-	-	-	-	-	-	-	-	-
3e.4.3	Heavy equipment rental	-	192	-	-	-	-	-	29	221	-	221	-	-	-	-	-	-	-	-	-
3e.4.4	Plant energy budget	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3e.4.5	NRC ISFSI Fees	-	-	-	-	-	-	58	-	58	-	58	-	-	-	-	-	-	-	-	-
3e.4.6	Site O&M	-	-	-	-	-	-	69	10	79	-	79	-	-	-	-	-	-	-	-	-
3e.4.7	Corporate A&G	-	-	-	-	-	-	86	13	99	-	99	-	-	-	-	-	-	-	-	-
3e.4.8	Security Staff Cost	-	-	-	-	-	-	86	13	99	-	99	-	-	-	-	-	-	-	-	5,013
3e.4.9	Utility Staff Cost	-	-	-	-	-	-	252	38	290	-	290	-	-	-	-	-	-	-	-	3,803
3e.4	Subtotal Period 3e Period-Dependent Costs	-	192	-	-	-	-	683	116	991	-	991	-	-	-	-	-	-	-	-	8,816
3e.0	TOTAL PERIOD 3e COST	-	225	5	32	-	75	1,963	340	2,640	-	2,640	-	-	1,231	-	-	-	102,129	3,165	11,376
PERIOD 3f - ISFSI Site Restoration																					
Period 3f Direct Decommissioning Activities																					
Period 3f Additional Costs																					
3f.2.1	ISFSI Demolitions and Site Restoration	-	1,298	-	-	-	-	78	206	1,582	-	1,582	-	-	-	-	-	-	-	17,348	160
3f.2	Subtotal Period 3f Additional Costs	-	1,298	-	-	-	-	78	206	1,582	-	1,582	-	-	-	-	-	-	-	17,348	160
Period 3f Collateral Costs																					
3f.3.1	Small tool allowance	-	13	-	-	-	-	-	2	15	-	15	-	-	-	-	-	-	-	-	-
3f.3	Subtotal Period 3f Collateral Costs	-	13	-	-	-	-	-	2	15	-	15	-	-	-	-	-	-	-	-	-
Period 3f Period-Dependent Costs																					
3f.4.1	Insurance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3f.4.2	Property taxes	-	-	-	-	-	-	1	0	1	-	1	-	-	-	-	-	-	-	-	-
3f.4.3	Heavy equipment rental	-	76	-	-	-	-	-	11	87	-	87	-	-	-	-	-	-	-	-	-
3f.4.4	Plant energy budget	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3f.4.5	Site O&M	-	-	-	-	-	-	35	5	40	-	40	-	-	-	-	-	-	-	-	-
3f.4.6	Corporate A&G	-	-	-	-	-	-	43	7	50	-	50	-	-	-	-	-	-	-	-	-
3f.4.7	Security Staff Cost	-	-	-	-	-	-	43	7	50	-	50	-	-	-	-	-	-	-	-	2,527
3f.4.8	Utility Staff Cost	-	-	-	-	-	-	107	16	122	-	122	-	-	-	-	-	-	-	-	1,569
3f.4	Subtotal Period 3f Period-Dependent Costs	-	76	-	-	-	-	229	46	351	-	351	-	-	-	-	-	-	-	-	4,096
3f.0	TOTAL PERIOD 3f COST	-	1,387	-	-	-	-	308	254	1,948	-	1,948	-	-	-	-	-	-	-	17,348	4,256
PERIOD 3 TOTALS		-	25,164	505	345	-	5,001	225,351	35,457	291,823	6,425	239,660	45,737	-	1,231	-	-	1,785	450,069	222,300	3,306,027
TOTAL COST TO DECOMMISSION		**9,462**	**80,322**	**16,337**	**18,762**	**24,323**	**54,734**	**631,449**	**144,531**	**979,919**	**566,714**	**365,318**	**47,887**	**346,162**	**302,088**	**2,106**	**918**	**1,785**	**40,278,720**	**1,000,242**	**7,033,654**

Table D-2
Vermont Yankee Nuclear Power Station
Scenario 4: 2032 Shutdown, DECON Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours

TOTAL COST TO DECOMMISSION WITH 17.3% CONTINGENCY:	$979,919	thousands of 2011 dollars
TOTAL NRC LICENSE TERMINATION COST IS 57.83% OR:	$566,714	thousands of 2011 dollars
SPENT FUEL MANAGEMENT COST IS 37.28% OR:	$365,318	thousands of 2011 dollars
NON-NUCLEAR DEMOLITION COST IS 4.89% OR:	$47,887	thousands of 2011 dollars
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC):	305,112	cubic feet
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED:	1,785	cubic feet
TOTAL SCRAP METAL REMOVED:	19,208	tons
TOTAL CRAFT LABOR REQUIREMENTS:	1,000,242	man-hours

End Notes:
n/a - indicates that this activity not charged as decommissioning expense.
a - indicates that this activity performed by decommissioning staff.
0 - indicates that this value is less than 0.5 but is non-zero.
a cell containing " - " indicates a zero value

APPENDIX E

DETAILED COST ANALYSES

2032 SHUTDOWN SCENARIOS, SAFSTOR ALTERNATIVE

Table E-1, Scenario 5 ..... E-2
Table E-2, Scenario 6 ..... E-16

Table E-1
Vermont Yankee Nuclear Power Station
Scenario 5: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a.1.1	SAFSTOR site characterization survey	-	-	-	-	-	-	295	89	384	384	-	-	-	-	-	-	-	-	-	-
1a.1.2	Prepare preliminary decommissioning cost	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
1a.1.3	Notification of Cessation of Operations									a											
1a.1.4	Remove fuel & source material									n/a											
1a.1.5	Notification of Permanent Defueling									a											
1a.1.6	Deactivate plant systems & process waste									a											
1a.1.7	Prepare and submit PSDAR	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1a.1.8	Review plant dwgs & specs.	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
1a.1.9	Perform detailed rad survey									a											
1a.1.10	Estimate by-product inventory	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.11	End product description	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.12	Detailed by-product inventory	-	-	-	-	-	-	176	26	202	202	-	-	-	-	-	-	-	-	-	1,500
1a.1.13	Define major work sequence	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.14	Perform SER and EA	-	-	-	-	-	-	363	54	417	417	-	-	-	-	-	-	-	-	-	3,100
1a.1.15	Perform Site-Specific Cost Study	-	-	-	-	-	-	585	88	673	673	-	-	-	-	-	-	-	-	-	5,000
Activity Specifications																					
1a.1.16.1	Prepare plant and facilities for SAFSTOR	-	-	-	-	-	-	576	86	662	662	-	-	-	-	-	-	-	-	-	4,920
1a.1.16.2	Plant systems	-	-	-	-	-	-	488	73	561	561	-	-	-	-	-	-	-	-	-	4,167
1a.1.16.3	Plant structures and buildings	-	-	-	-	-	-	365	55	420	420	-	-	-	-	-	-	-	-	-	3,120
1a.1.16.4	Waste management	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1a.1.16.5	Facility and site dormancy	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1a.1.16	Total	-	-	-	-	-	-	1,897	285	2,182	2,182	-	-	-	-	-	-	-	-	-	16,207
Detailed Work Procedures																					
1a.1.17.1	Plant systems	-	-	-	-	-	-	138	21	159	159	-	-	-	-	-	-	-	-	-	1,183
1a.1.17.2	Facility closeout & dormancy	-	-	-	-	-	-	140	21	162	162	-	-	-	-	-	-	-	-	-	1,200
1a.1.17	Total	-	-	-	-	-	-	279	42	321	321	-	-	-	-	-	-	-	-	-	2,383
1a.1.18	Procure vacuum drying system	-	-	-	-	-	-	12	2	13	13	-	-	-	-	-	-	-	-	-	100
1a.1.19	Drain/de-energize non-cont. systems									a											
1a.1.20	Drain & dry NSSS									a											
1a.1.21	Drain/de-energize contaminated systems									a											
1a.1.22	Decon/secure contaminated systems									a											
1a.1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	4,496	719	5,215	5,215	-	-	-	-	-	-	-	-	-	35,890
Period 1a Collateral Costs																					
1a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	9,421	1,413	10,835	-	10,835	-	-	-	-	-	-	-	-	-
1a.3	Subtotal Period 1a Collateral Costs	-	-	-	-	-	-	9,421	1,413	10,835	-	10,835	-	-	-	-	-	-	-	-	-
Period 1a Period-Dependent Costs																					
1a.4.1	Insurance	-	-	-	-	-	-	857	86	943	943	-	-	-	-	-	-	-	-	-	-
1a.4.2	Property taxes	-	-	-	-	-	-	7	1	7	7	-	-	-	-	-	-	-	-	-	-
1a.4.3	Health physics supplies	-	347	-	-	-	-	-	87	433	433	-	-	-	-	-	-	-	-	-	-
1a.4.4	Heavy equipment rental	-	338	-	-	-	-	-	51	389	389	-	-	-	-	-	-	-	-	-	-
1a.4.5	Disposal of DAW generated	-	-	11	10	-	45	-	14	79	79	-	-	-	610	-	-	-	12,190	20	-
1a.4.6	Plant energy budget	-	-	-	-	-	-	1,173	176	1,349	1,349	-	-	-	-	-	-	-	-	-	-
1a.4.7	NRC Fees	-	-	-	-	-	-	809	81	890	890	-	-	-	-	-	-	-	-	-	-
1a.4.8	Emergency Planning Fees	-	-	-	-	-	-	4,660	466	5,126	-	5,126	-	-	-	-	-	-	-	-	-
1a.4.9	Site O&M	-	-	-	-	-	-	208	31	239	239	-	-	-	-	-	-	-	-	-	-
1a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	763	114	878	-	878	-	-	-	-	-	-	-	-	-
1a.4.11	ISFSI Operating Costs	-	-	-	-	-	-	89	13	103	-	103	-	-	-	-	-	-	-	-	-
1a.4.12	Corporate A&G	-	-	-	-	-	-	8,708	1,306	10,014	10,014	-	-	-	-	-	-	-	-	-	-
1a.4.13	Security Staff Cost	-	-	-	-	-	-	5,097	765	5,862	5,862	-	-	-	-	-	-	-	-	-	157,471
1a.4.14	Utility Staff Cost	-	-	-	-	-	-	24,094	3,614	27,708	27,708	-	-	-	-	-	-	-	-	-	423,400
1a.4	Subtotal Period 1a Period-Dependent Costs	-	685	11	10	-	45	46,464	6,804	54,019	47,913	6,106	-	-	610	-	-	-	12,190	20	580,871

Table E-1
Vermont Yankee Nuclear Power Station
Scenario 5: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
1a.0	TOTAL PERIOD 1a COST	-	685	11	10	-	45	60,382	8,936	70,069	53,128	16,941	-	-	610	-	-	-	12,190	20	616,761
PERIOD 1b - SAFSTOR Limited DECON Activities																					
Period 1b Direct Decommissioning Activities																					
Decontamination of Site Buildings																					
1b.1.1.1	Reactor	2,212	-	-	-	-	-	-	1,106	3,318	3,318	-	-	-	-	-	-	-	-	35,257	-
1b.1.1.2	AOG	93	-	-	-	-	-	-	47	140	140	-	-	-	-	-	-	-	-	1,486	-
1b.1.1.3	Equipment Lock	7	-	-	-	-	-	-	3	10	10	-	-	-	-	-	-	-	-	108	-
1b.1.1.4	LLRW	1	-	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	11	-
1b.1.1.5	Misc Cont Yard Structures	85	-	-	-	-	-	-	43	128	128	-	-	-	-	-	-	-	-	1,359	-
1b.1.1.6	North Warehouse	34	-	-	-	-	-	-	17	51	51	-	-	-	-	-	-	-	-	544	-
1b.1.1.7	Radwaste	65	-	-	-	-	-	-	32	97	97	-	-	-	-	-	-	-	-	1,033	-
1b.1.1.8	Radwaste Compactor	2	-	-	-	-	-	-	1	3	3	-	-	-	-	-	-	-	-	36	-
1b.1.1.9	Turbine	531	-	-	-	-	-	-	265	796	796	-	-	-	-	-	-	-	-	8,452	-
1b.1.1.10	Reactor (post fuel)	158	-	-	-	-	-	-	79	236	236	-	-	-	-	-	-	-	-	2,511	-
1b.1.1	Totals	3,188	-	-	-	-	-	-	1,594	4,781	4,781	-	-	-	-	-	-	-	-	50,798	-
1b.1	Subtotal Period 1b Activity Costs	3,188	-	-	-	-	-	-	1,594	4,781	4,781	-	-	-	-	-	-	-	-	50,798	-
Period 1b Additional Costs																					
1b.2.1	Spent Fuel Pool Isolation	-	-	-	-	-	-	10,280	1,542	11,822	11,822	-	-	-	-	-	-	-	-	-	-
1b.2.2	Asbestos Remediation	-	1,644	30	177	-	602	67	601	3,121	3,121	-	-	-	9,938	-	-	-	129,188	13,287	-
1b.2.3	Operational Waste	406	-	139	1,052	-	1,045	-	636	3,277	3,277	-	-	-	2,600	-	-	-	156,000	507	-
1b.2.4	Hazardous Waste	-	-	197	95	1,692	-	-	288	2,271	2,271	-	-	3,288	-	-	-	-	354,266	1,619	-
1b.2	Subtotal Period 1b Additional Costs	406	1,644	366	1,323	1,692	1,647	10,347	3,067	20,491	20,491	-	-	3,288	12,538	-	-	-	639,454	15,413	-
Period 1b Collateral Costs																					
1b.3.1	Decon equipment	667	-	-	-	-	-	-	100	767	767	-	-	-	-	-	-	-	-	-	-
1b.3.2	Process decommissioning water waste	267	-	90	681	-	677	-	414	2,128	2,128	-	-	-	1,684	-	-	-	101,021	328	-
1b.3.4	Small tool allowance	-	60	-	-	-	-	-	9	69	69	-	-	-	-	-	-	-	-	-	-
1b.3.5	Spent Fuel Capital and Transfer	-	-	-	-	-	-	3,627	544	4,171	-	4,171	-	-	-	-	-	-	-	-	-
1b.3	Subtotal Period 1b Collateral Costs	933	60	90	681	-	677	3,627	1,067	7,135	2,964	4,171	-	-	1,684	-	-	-	101,021	328	-
Period 1b Period-Dependent Costs																					
1b.4.1	Decon supplies	1,275	-	-	-	-	-	-	319	1,593	1,593	-	-	-	-	-	-	-	-	-	-
1b.4.2	Insurance	-	-	-	-	-	-	105	11	116	116	-	-	-	-	-	-	-	-	-	-
1b.4.3	Property taxes	-	-	-	-	-	-	2	0	2	2	-	-	-	-	-	-	-	-	-	-
1b.4.4	Health physics supplies	-	301	-	-	-	-	-	75	376	376	-	-	-	-	-	-	-	-	-	-
1b.4.5	Heavy equipment rental	-	85	-	-	-	-	-	13	98	98	-	-	-	-	-	-	-	-	-	-
1b.4.6	Disposal of DAW generated	-	-	8	7	-	35	-	11	61	61	-	-	-	466	-	-	-	9,315	15	-
1b.4.7	Plant energy budget	-	-	-	-	-	-	296	44	340	340	-	-	-	-	-	-	-	-	-	-
1b.4.8	NRC Fees	-	-	-	-	-	-	146	15	161	161	-	-	-	-	-	-	-	-	-	-
1b.4.9	Emergency Planning Fees	-	-	-	-	-	-	1,032	103	1,136	-	1,136	-	-	-	-	-	-	-	-	-
1b.4.10	Site O&M	-	-	-	-	-	-	52	8	60	60	-	-	-	-	-	-	-	-	-	-
1b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	192	29	221	-	221	-	-	-	-	-	-	-	-	-
1b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	23	3	26	-	26	-	-	-	-	-	-	-	-	-
1b.4.13	Corporate A&G	-	-	-	-	-	-	1,090	164	1,254	1,254	-	-	-	-	-	-	-	-	-	-
1b.4.14	Security Staff Cost	-	-	-	-	-	-	1,285	193	1,478	1,478	-	-	-	-	-	-	-	-	-	39,691
1b.4.15	Utility Staff Cost	-	-	-	-	-	-	6,073	911	6,984	6,984	-	-	-	-	-	-	-	-	-	106,720
1b.4	Subtotal Period 1b Period-Dependent Costs	1,275	386	8	7	-	35	10,297	1,898	13,905	12,523	1,383	-	-	466	-	-	-	9,315	15	146,411
1b.0	TOTAL PERIOD 1b COST	5,801	2,091	464	2,012	1,692	2,359	24,270	7,625	46,314	40,760	5,554	-	3,288	14,687	-	-	-	749,790	66,554	146,411

Table E-1
Vermont Yankee Nuclear Power Station
Scenario 5: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1c - Preparations for SAFSTOR Dormancy																					
Period 1c Direct Decommissioning Activities																					
1c.1.1	Prepare support equipment for storage	-	455	-	-	-	-	-	68	523	523	-	-	-	-	-	-	-	-	3,000	-
1c.1.2	Install containment pressure equal. lines	-	43	-	-	-	-	-	6	50	50	-	-	-	-	-	-	-	-	700	-
1c.1.3	Interim survey prior to dormancy	-	-	-	-	-	-	733	220	953	953	-	-	-	-	-	-	-	-	18,863	-
1c.1.4	Secure building accesses									a											
1c.1.5	Prepare & submit interim report	-	-	-	-	-	-	68	10	79	79	-	-	-	-	-	-	-	-	-	583
1c.1	Subtotal Period 1c Activity Costs	-	498	-	-	-	-	801	305	1,604	1,604	-	-	-	-	-	-	-	-	22,563	583
Period 1c Collateral Costs																					
1c.3.1	Process decommissioning water waste	196	-	66	501	-	498	-	304	1,565	1,565	-	-	-	1,238	-	-	-	74,305	241	-
1c.3.3	Small tool allowance	-	3	-	-	-	-	-	0	4	4	-	-	-	-	-	-	-	-	-	-
1c.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	3,666	550	4,216	-	4,216	-	-	-	-	-	-	-	-	-
1c.3	Subtotal Period 1c Collateral Costs	196	3	66	501	-	498	3,666	854	5,785	1,568	4,216	-	-	1,238	-	-	-	74,305	241	-
Period 1c Period-Dependent Costs																					
1c.4.1	Insurance	-	-	-	-	-	-	106	11	117	117	-	-	-	-	-	-	-	-	-	-
1c.4.2	Property taxes	-	-	-	-	-	-	2	0	2	2	-	-	-	-	-	-	-	-	-	-
1c.4.3	Health physics supplies	-	162	-	-	-	-	-	40	202	202	-	-	-	-	-	-	-	-	-	-
1c.4.4	Heavy equipment rental	-	86	-	-	-	-	-	13	99	99	-	-	-	-	-	-	-	-	-	-
1c.4.5	Disposal of DAW generated	-	-	3	2	-	12	-	4	20	20	-	-	-	155	-	-	-	3,106	5	-
1c.4.6	Plant energy budget	-	-	-	-	-	-	299	45	344	344	-	-	-	-	-	-	-	-	-	-
1c.4.7	NRC Fees	-	-	-	-	-	-	148	15	163	163	-	-	-	-	-	-	-	-	-	-
1c.4.8	Emergency Planning Fees	-	-	-	-	-	-	1,044	104	1,148	-	1,148	-	-	-	-	-	-	-	-	-
1c.4.9	Site O&M	-	-	-	-	-	-	53	8	61	61	-	-	-	-	-	-	-	-	-	-
1c.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	194	29	224	-	224	-	-	-	-	-	-	-	-	-
1c.4.11	ISFSI Operating Costs	-	-	-	-	-	-	23	3	26	-	26	-	-	-	-	-	-	-	-	-
1c.4.12	Corporate A&G	-	-	-	-	-	-	1,102	165	1,267	1,267	-	-	-	-	-	-	-	-	-	-
1c.4.13	Security Staff Cost	-	-	-	-	-	-	1,299	195	1,494	1,494	-	-	-	-	-	-	-	-	-	40,123
1c.4.14	Utility Staff Cost	-	-	-	-	-	-	6,139	921	7,060	7,060	-	-	-	-	-	-	-	-	-	107,880
1c.4	Subtotal Period 1c Period-Dependent Costs	-	248	3	2	-	12	10,409	1,553	12,226	10,828	1,398	-	-	155	-	-	-	3,106	5	148,003
1c.0	TOTAL PERIOD 1c COST	196	749	69	504	-	509	14,876	2,712	19,614	14,000	5,614	-	-	1,394	-	-	-	77,411	22,810	148,586
PERIOD 1 TOTALS		5,997	3,525	543	2,525	1,692	2,913	99,528	19,273	135,997	107,889	28,108	-	3,288	16,691	-	-	-	839,391	89,384	911,759
PERIOD 2a - SAFSTOR Dormancy with Wet Spent Fuel Storage																					
Period 2a Direct Decommissioning Activities																					
2a.1.1	Quarterly Inspection									a											
2a.1.2	Semi-annual environmental survey									a											
2a.1.3	Prepare reports									a											
2a.1.4	Bituminous roof replacement	-	-	-	-	-	-	231	35	265	265	-	-	-	-	-	-	-	-	-	-
2a.1.5	Maintenance supplies	-	-	-	-	-	-	539	135	673	673	-	-	-	-	-	-	-	-	-	-
2a.1	Subtotal Period 2a Activity Costs	-	-	-	-	-	-	769	169	938	938	-	-	-	-	-	-	-	-	-	-
Period 2a Collateral Costs																					
2a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	51,291	7,694	58,985	-	58,985	-	-	-	-	-	-	-	-	-
2a.3	Subtotal Period 2a Collateral Costs	-	-	-	-	-	-	51,291	7,694	58,985	-	58,985	-	-	-	-	-	-	-	-	-
Period 2a Period-Dependent Costs																					
2a.4.1	Insurance	-	-	-	-	-	-	1,668	167	1,835	1,676	159	-	-	-	-	-	-	-	-	-
2a.4.2	Property taxes	-	-	-	-	-	-	27	3	30	30	-	-	-	-	-	-	-	-	-	-
2a.4.3	Health physics supplies	-	555	-	-	-	-	-	139	694	694	-	-	-	-	-	-	-	-	-	-
2a.4.4	Disposal of DAW generated	-	-	16	15	-	68	-	21	120	120	-	-	-	918	-	-	-	18,368	30	-
2a.4.5	Plant energy budget	-	-	-	-	-	-	936	140	1,077	538	538	-	-	-	-	-	-	-	-	-
2a.4.6	NRC Fees	-	-	-	-	-	-	833	83	916	916	-	-	-	-	-	-	-	-	-	-
2a.4.7	Emergency Planning Fees	-	-	-	-	-	-	16,349	1,635	17,984	-	17,984	-	-	-	-	-	-	-	-	-

Table E-1
Vermont Yankee Nuclear Power Station
Scenario 5: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2a Period-Dependent Costs (continued)																					
2a.4.8	Site O&M	-	-	-	-	-	-	830	124	954	954	-	-	-	-	-	-	-	-	-	-
2a.4.9	Spent Fuel Pool O&M	-	-	-	-	-	-	3,046	457	3,503	-	3,503	-	-	-	-	-	-	-	-	-
2a.4.10	ISFSI Operating Costs	-	-	-	-	-	-	357	54	411	-	411	-	-	-	-	-	-	-	-	-
2a.4.11	Corporate A&G	-	-	-	-	-	-	6,204	931	7,135	877	6,258	-	-	-	-	-	-	-	-	-
2a.4.12	Security Staff Cost	-	-	-	-	-	-	14,592	2,189	16,781	2,469	14,312	-	-	-	-	-	-	-	-	443,344
2a.4.13	Utility Staff Cost	-	-	-	-	-	-	19,610	2,941	22,551	4,658	17,893	-	-	-	-	-	-	-	-	328,866
2a.4	Subtotal Period 2a Period-Dependent Costs	-	555	16	15	-	68	64,453	8,884	73,990	12,933	61,057	-	-	918	-	-	-	18,368	30	772,210
2a.0	TOTAL PERIOD 2a COST	-	555	16	15	-	68	116,513	16,747	133,914	13,871	120,042	-	-	918	-	-	-	18,368	30	772,210
PERIOD 2b - SAFSTOR Dormancy with Dry Spent Fuel Storage																					
Period 2b Direct Decommissioning Activities																					
2b.1.1	Quarterly Inspection									a											
2b.1.2	Semi-annual environmental survey									a											
2b.1.3	Prepare reports									a											
2b.1.4	Bituminous roof replacement	-	-	-	-	-	-	1,346	202	1,548	1,548	-	-	-	-	-	-	-	-	-	-
2b.1.5	Maintenance supplies	-	-	-	-	-	-	3,144	786	3,929	3,929	-	-	-	-	-	-	-	-	-	-
2b.1	Subtotal Period 2b Activity Costs	-	-	-	-	-	-	4,490	988	5,477	5,477	-	-	-	-	-	-	-	-	-	-
Period 2b Additional Costs																					
2b.2.1	Remove spent fuel racks	576	67	132	260	-	1,908	-	834	3,776	3,776	-	-	-	8,439	-	-	-	717,311	1,332	-
2b.2	Subtotal Period 2b Additional Costs	576	67	132	260	-	1,908	-	834	3,776	3,776	-	-	-	8,439	-	-	-	717,311	1,332	-
Period 2b Collateral Costs																					
2b.3.1	Small tool allowance	-	8	-	-	-	-	-	1	9	9	-	-	-	-	-	-	-	-	-	-
2b.3.2	Spent Fuel Capital and Transfer	-	-	-	-	-	-	6,200	930	7,130	-	7,130	-	-	-	-	-	-	-	-	-
2b.3	Subtotal Period 2b Collateral Costs	-	8	-	-	-	-	6,200	931	7,139	9	7,130	-	-	-	-	-	-	-	-	-
Period 2b Period-Dependent Costs																					
2b.4.1	Insurance	-	-	-	-	-	-	9,091	909	10,000	(0)	10,000	-	-	-	-	-	-	-	-	-
2b.4.2	Property taxes	-	-	-	-	-	-	158	16	174	174	-	-	-	-	-	-	-	-	-	-
2b.4.3	Health physics supplies	-	1,576	-	-	-	-	-	394	1,970	1,970	-	-	-	-	-	-	-	-	-	-
2b.4.4	Disposal of DAW generated	-	-	44	41	-	191	-	58	335	335	-	-	-	2,575	-	-	-	51,506	84	-
2b.4.5	Plant energy budget	-	-	-	-	-	-	2,733	410	3,143	3,143	-	-	-	-	-	-	-	-	-	-
2b.4.6	NRC Fees	-	-	-	-	-	-	4,574	457	5,031	5,031	-	-	-	-	-	-	-	-	-	-
2b.4.7	Emergency Planning Fees	-	-	-	-	-	-	8,429	843	9,272	-	9,272	-	-	-	-	-	-	-	-	-
2b.4.8	Site O&M	-	-	-	-	-	-	4,843	727	5,570	(0)	5,570	-	-	-	-	-	-	-	-	-
2b.4.9	ISFSI Operating Costs	-	-	-	-	-	-	2,084	313	2,397	-	2,397	-	-	-	-	-	-	-	-	-
2b.4.10	Corporate A&G	-	-	-	-	-	-	6,044	907	6,951	0	6,951	-	-	-	-	-	-	-	-	-
2b.4.11	Security Staff Cost	-	-	-	-	-	-	45,539	6,831	52,370	(0)	52,370	-	-	-	-	-	-	-	-	1,312,200
2b.4.12	Utility Staff Cost	-	-	-	-	-	-	45,255	6,788	52,043	28,139	23,905	-	-	-	-	-	-	-	-	777,600
2b.4	Subtotal Period 2b Period-Dependent Costs	-	1,576	44	41	-	191	128,752	18,653	149,257	38,793	110,465	-	-	2,575	-	-	-	51,506	84	2,089,800
2b.0	TOTAL PERIOD 2b COST	576	1,651	176	301	-	2,099	139,442	21,405	165,650	48,056	117,595	-	-	11,014	-	-	-	768,817	1,416	2,089,800
PERIOD 2c - SAFSTOR Dormancy without Spent Fuel Storage																					
Period 2c Direct Decommissioning Activities																					
2c.1.1	Quarterly Inspection									a											
2c.1.2	Semi-annual environmental survey									a											
2c.1.3	Prepare reports									a											
2c.1.4	Bituminous roof replacement	-	-	-	-	-	-	1,459	219	1,678	1,678	-	-	-	-	-	-	-	-	-	-
2c.1.5	Maintenance supplies	-	-	-	-	-	-	3,407	852	4,259	4,259	-	-	-	-	-	-	-	-	-	-
2c.1	Subtotal Period 2c Activity Costs	-	-	-	-	-	-	4,867	1,071	5,937	5,937	-	-	-	-	-	-	-	-	-	-
Period 2c Period-Dependent Costs																					
2c.4.1	Insurance	-	-	-	-	-	-	9,643	964	10,608	10,608	-	-	-	-	-	-	-	-	-	-
2c.4.2	Property taxes	-	-	-	-	-	-	172	17	189	189	-	-	-	-	-	-	-	-	-	-
2c.4.3	Health physics supplies	-	1,602	-	-	-	-	-	401	2,003	2,003	-	-	-	-	-	-	-	-	-	-

Table E-1
Vermont Yankee Nuclear Power Station
Scenario 5: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2c Period-Dependent Costs (continued)																					
2c.4.4	Disposal of DAW generated	-	-	44	41	-	191	-	58	335	335	-	-	-	2,571	-	-	-	51,419	84	-
2c.4.5	Plant energy budget	-	-	-	-	-	-	2,963	444	3,407	3,407	-	-	-	-	-	-	-	-	-	-
2c.4.6	NRC Fees	-	-	-	-	-	-	4,435	444	4,879	4,879	-	-	-	-	-	-	-	-	-	-
2c.4.7	Site O&M	-	-	-	-	-	-	5,250	787	6,037	6,037	-	-	-	-	-	-	-	-	-	-
2c.4.8	Corporate A&G	-	-	-	-	-	-	4,825	724	5,549	5,549	-	-	-	-	-	-	-	-	-	-
2c.4.9	Security Staff Cost	-	-	-	-	-	-	13,585	2,038	15,622	15,622	-	-	-	-	-	-	-	-	-	790,200
2c.4.10	Utility Staff Cost	-	-	-	-	-	-	25,629	3,844	29,473	29,473	-	-	-	-	-	-	-	-	-	460,950
2c.4	Subtotal Period 2c Period-Dependent Costs	-	1,602	44	41	-	191	66,501	9,722	78,102	78,102	-	-	-	2,571	-	-	-	51,419	84	1,251,150
2c.0	TOTAL PERIOD 2c COST	-	1,602	44	41	-	191	71,368	10,792	84,039	84,039	-	-	-	2,571	-	-	-	51,419	84	1,251,150
PERIOD 2 TOTALS		576	3,809	236	358	-	2,358	327,322	48,944	383,603	145,966	237,637	-	-	14,504	-	-	-	838,605	1,530	4,113,160
PERIOD 3a - Reactivate Site Following SAFSTOR Dormancy																					
Period 3a Direct Decommissioning Activities																					
3a.1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
3a.1.2	Review plant dwgs & specs.	-	-	-	-	-	-	538	81	619	619	-	-	-	-	-	-	-	-	-	4,600
3a.1.3	Perform detailed rad survey									a											
3a.1.4	End product description	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
3a.1.5	Detailed by-product inventory	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
3a.1.6	Define major work sequence	-	-	-	-	-	-	878	132	1,010	1,010	-	-	-	-	-	-	-	-	-	7,500
3a.1.7	Perform SER and EA	-	-	-	-	-	-	363	54	417	417	-	-	-	-	-	-	-	-	-	3,100
3a.1.8	Perform Site-Specific Cost Study	-	-	-	-	-	-	585	88	673	673	-	-	-	-	-	-	-	-	-	5,000
3a.1.9	Prepare/submit License Termination Plan	-	-	-	-	-	-	479	72	551	551	-	-	-	-	-	-	-	-	-	4,096
3a.1.10	Receive NRC approval of termination plan									a											
Activity Specifications																					
3a.1.11.1	Re-activate plant & temporary facilities	-	-	-	-	-	-	863	129	992	893	-	99	-	-	-	-	-	-	-	7,370
3a.1.11.2	Plant systems	-	-	-	-	-	-	488	73	561	505	-	56	-	-	-	-	-	-	-	4,167
3a.1.11.3	Reactor internals	-	-	-	-	-	-	831	125	956	956	-	-	-	-	-	-	-	-	-	7,100
3a.1.11.4	Reactor vessel	-	-	-	-	-	-	761	114	875	875	-	-	-	-	-	-	-	-	-	6,500
3a.1.11.5	Sacrificial shield	-	-	-	-	-	-	59	9	67	67	-	-	-	-	-	-	-	-	-	500
3a.1.11.6	Moisture separators/reheaters	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
3a.1.11.7	Reinforced concrete	-	-	-	-	-	-	187	28	215	108	-	108	-	-	-	-	-	-	-	1,600
3a.1.11.8	Main Turbine	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
3a.1.11.9	Main Condensers	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
3a.1.11.10	Pressure suppression structure	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
3a.1.11.11	Drywell	-	-	-	-	-	-	187	28	215	215	-	-	-	-	-	-	-	-	-	1,600
3a.1.11.12	Plant structures & buildings	-	-	-	-	-	-	365	55	420	210	-	210	-	-	-	-	-	-	-	3,120
3a.1.11.13	Waste management	-	-	-	-	-	-	538	81	619	619	-	-	-	-	-	-	-	-	-	4,600
3a.1.11.14	Facility & site closeout	-	-	-	-	-	-	105	16	121	61	-	61	-	-	-	-	-	-	-	900
3a.1.11	Total	-	-	-	-	-	-	5,224	784	6,008	5,474	-	534	-	-	-	-	-	-	-	44,633
Planning & Site Preparations																					
3a.1.12	Prepare dismantling sequence	-	-	-	-	-	-	281	42	323	323	-	-	-	-	-	-	-	-	-	2,400
3a.1.13	Plant prep. & temp. svces	-	-	-	-	-	-	2,800	420	3,220	3,220	-	-	-	-	-	-	-	-	-	-
3a.1.14	Design water clean-up system	-	-	-	-	-	-	164	25	188	188	-	-	-	-	-	-	-	-	-	1,400
3a.1.15	Rigging/Cont. Cntrl Envlps/tooling/etc.	-	-	-	-	-	-	2,200	330	2,530	2,530	-	-	-	-	-	-	-	-	-	-
3a.1.16	Procure casks/liners & containers	-	-	-	-	-	-	144	22	166	166	-	-	-	-	-	-	-	-	-	1,230
3a.1	Subtotal Period 3a Activity Costs	-	-	-	-	-	-	14,078	2,112	16,190	15,656	-	534	-	-	-	-	-	-	-	77,559
Period 3a Period-Dependent Costs																					
3a.4.1	Insurance	-	-	-	-	-	-	382	38	420	420	-	-	-	-	-	-	-	-	-	-
3a.4.2	Property taxes	-	-	-	-	-	-	7	1	7	7	-	-	-	-	-	-	-	-	-	-
3a.4.3	Health physics supplies	-	303	-	-	-	-	-	76	379	379	-	-	-	-	-	-	-	-	-	-
3a.4.4	Heavy equipment rental	-	338	-	-	-	-	-	51	389	389	-	-	-	-	-	-	-	-	-	-
3a.4.5	Disposal of DAW generated	-	-	9	8	-	38	-	12	67	67	-	-	-	514	-	-	-	10,287	17	-
3a.4.6	Plant energy budget	-	-	-	-	-	-	1,173	176	1,349	1,349	-	-	-	-	-	-	-	-	-	-

Table E-1
Vermont Yankee Nuclear Power Station
Scenario 5: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 3a Period-Dependent Costs (continued)																					
3a.4.7	NRC Fees	-	-	-	-	-	-	262	26	289	289	-	-	-	-	-	-	-	-	-	-
3a.4.8	Site O&M	-	-	-	-	-	-	208	31	239	239	-	-	-	-	-	-	-	-	-	-
3a.4.9	Corporate A&G	-	-	-	-	-	-	1,887	283	2,170	2,170	-	-	-	-	-	-	-	-	-	-
3a.4.10	Security Staff Cost	-	-	-	-	-	-	1,121	168	1,289	1,289	-	-	-	-	-	-	-	-	-	65,179
3a.4.11	Utility Staff Cost	-	-	-	-	-	-	14,940	2,241	17,181	17,181	-	-	-	-	-	-	-	-	-	258,629
3a.4	Subtotal Period 3a Period-Dependent Costs	-	641	9	8	-	38	19,979	3,103	23,778	23,778	-	-	-	514	-	-	-	10,287	17	323,807
3a.0	TOTAL PERIOD 3a COST	-	641	9	8	-	38	34,057	5,214	39,968	39,435	-	534	-	514	-	-	-	10,287	17	401,366
PERIOD 3b - Decommissioning Preparations																					
Period 3b Direct Decommissioning Activities																					
Detailed Work Procedures																					
3b.1.1.1	Plant systems	-	-	-	-	-	-	554	83	637	573	-	64	-	-	-	-	-	-	-	4,733
3b.1.1.2	Reactor internals	-	-	-	-	-	-	468	70	538	538	-	-	-	-	-	-	-	-	-	4,000
3b.1.1.3	Remaining buildings	-	-	-	-	-	-	158	24	182	45	-	136	-	-	-	-	-	-	-	1,350
3b.1.1.4	CRD housings & NIs	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
3b.1.1.5	Incore instrumentation	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
3b.1.1.6	Removal primary containment	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
3b.1.1.7	Reactor vessel	-	-	-	-	-	-	425	64	489	489	-	-	-	-	-	-	-	-	-	3,630
3b.1.1.8	Facility closeout	-	-	-	-	-	-	140	21	162	81	-	81	-	-	-	-	-	-	-	1,200
3b.1.1.9	Sacrificial shield	-	-	-	-	-	-	140	21	162	162	-	-	-	-	-	-	-	-	-	1,200
3b.1.1.10	Reinforced concrete	-	-	-	-	-	-	117	18	135	67	-	67	-	-	-	-	-	-	-	1,000
3b.1.1.11	Main Turbine	-	-	-	-	-	-	243	37	280	280	-	-	-	-	-	-	-	-	-	2,080
3b.1.1.12	Main Condensers	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
3b.1.1.13	Moisture separators & reheaters	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
3b.1.1.14	Radwaste building	-	-	-	-	-	-	320	48	367	331	-	37	-	-	-	-	-	-	-	2,730
3b.1.1.15	Reactor building	-	-	-	-	-	-	320	48	367	331	-	37	-	-	-	-	-	-	-	2,730
3b.1.1	Total	-	-	-	-	-	-	3,832	575	4,407	3,986	-	422	-	-	-	-	-	-	-	32,741
3b.1	Subtotal Period 3b Activity Costs	-	-	-	-	-	-	3,832	575	4,407	3,986	-	422	-	-	-	-	-	-	-	32,741
Period 3b Additional Costs																					
3b.2.1	Site Characterization	-	-	-	-	-	-	3,706	1,112	4,818	4,818	-	-	-	-	-	-	-	-	-	-
3b.2	Subtotal Period 3b Additional Costs	-	-	-	-	-	-	3,706	1,112	4,818	4,818	-	-	-	-	-	-	-	-	-	-
Period 3b Collateral Costs																					
3b.3.1	Decon equipment	667	-	-	-	-	-	-	100	767	767	-	-	-	-	-	-	-	-	-	-
3b.3.2	DOC staff relocation expenses	-	-	-	-	-	-	1,030	154	1,184	1,184	-	-	-	-	-	-	-	-	-	-
3b.3.3	Pipe cutting equipment	-	1,100	-	-	-	-	-	165	1,265	1,265	-	-	-	-	-	-	-	-	-	-
3b.3	Subtotal Period 3b Collateral Costs	667	1,100	-	-	-	-	1,030	419	3,216	3,216	-	-	-	-	-	-	-	-	-	-
Period 3b Period-Dependent Costs																					
3b.4.1	Decon supplies	21	-	-	-	-	-	-	5	26	26	-	-	-	-	-	-	-	-	-	-
3b.4.2	Insurance	-	-	-	-	-	-	212	21	233	233	-	-	-	-	-	-	-	-	-	-
3b.4.3	Property taxes	-	-	-	-	-	-	3	0	4	4	-	-	-	-	-	-	-	-	-	-
3b.4.4	Health physics supplies	-	169	-	-	-	-	-	42	212	212	-	-	-	-	-	-	-	-	-	-
3b.4.5	Heavy equipment rental	-	172	-	-	-	-	-	26	197	197	-	-	-	-	-	-	-	-	-	-
3b.4.6	Disposal of DAW generated	-	-	5	5	-	22	-	7	38	38	-	-	-	295	-	-	-	5,898	10	-
3b.4.7	Plant energy budget	-	-	-	-	-	-	595	89	684	684	-	-	-	-	-	-	-	-	-	-
3b.4.8	NRC Fees	-	-	-	-	-	-	133	13	146	146	-	-	-	-	-	-	-	-	-	-
3b.4.9	Site O&M	-	-	-	-	-	-	105	16	121	121	-	-	-	-	-	-	-	-	-	-
3b.4.10	Corporate A&G	-	-	-	-	-	-	1,045	157	1,202	1,202	-	-	-	-	-	-	-	-	-	-
3b.4.11	Security Staff Cost	-	-	-	-	-	-	568	85	653	653	-	-	-	-	-	-	-	-	-	33,036
3b.4.12	DOC Staff Cost	-	-	-	-	-	-	5,092	764	5,856	5,856	-	-	-	-	-	-	-	-	-	59,200
3b.4.13	Utility Staff Cost	-	-	-	-	-	-	7,572	1,136	8,708	8,708	-	-	-	-	-	-	-	-	-	131,086
3b.4	Subtotal Period 3b Period-Dependent Costs	21	341	5	5	-	22	15,326	2,361	18,080	18,080	-	-	-	295	-	-	-	5,898	10	223,321
3b.0	TOTAL PERIOD 3b COST	687	1,441	5	5	-	22	23,894	4,468	30,522	30,100	-	422	-	295	-	-	-	5,898	10	256,062

Table E-1
Vermont Yankee Nuclear Power Station
Scenario 5: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 3 TOTALS		687	2,082	14	13	-	60	57,951	9,682	70,490	69,535	-	955	-	809	-	-	-	16,185	26	657,428
PERIOD 4a - Large Component Removal																					
Period 4a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
4a.1.1.1	Recirculation System Piping & Valves	22	71	20	28	89	185	-	94	509	509	-	-	575	608	-	-	-	133,340	1,761	-
4a.1.1.2	Recirculation Pumps & Motors	8	37	13	38	85	134	-	67	382	382	-	-	1,075	894	-	-	-	111,100	946	-
4a.1.1.3	CRDMs & NIs Removal	19	80	234	85	-	178	-	110	706	706	-	-	-	2,561	-	-	-	67,063	1,879	-
4a.1.1.4	Reactor Vessel Internals	81	2,632	6,802	1,287	-	5,211	253	6,680	22,946	22,946	-	-	-	1,002	751	856	-	258,030	28,033	1,253
4a.1.1.5	Vessel & Internals GTCC Disposal	-	-	-	-	-	4,926	-	739	5,665	5,665	-	-	-	-	-	-	1,785	347,940	-	-
4a.1.1.6	Reactor Vessel	-	6,294	1,513	674	-	2,889	253	6,749	18,372	18,372	-	-	-	12,772	-	-	-	1,292,271	28,033	1,253
4a.1.1	Totals	130	9,114	8,582	2,112	174	13,523	505	14,440	48,579	48,579	-	-	1,650	17,836	751	856	1,785	2,209,743	60,652	2,507
Removal of Major Equipment																					
4a.1.2	Main Turbine/Generator	-	217	1,149	546	4,201	-	-	881	6,993	6,993	-	-	66,677	-	-	-	-	3,000,454	3,897	-
4a.1.3	Main Condensers	-	475	645	306	2,358	-	-	583	4,366	4,366	-	-	37,422	-	-	-	-	1,684,000	8,400	-
Cascading Costs from Clean Building Demolition																					
4a.1.4.1	Reactor	-	701	-	-	-	-	-	105	806	806	-	-	-	-	-	-	-	-	8,238	-
4a.1.4.2	AOG	-	85	-	-	-	-	-	13	98	98	-	-	-	-	-	-	-	-	1,032	-
4a.1.4.3	Equipment Lock	-	4	-	-	-	-	-	1	5	5	-	-	-	-	-	-	-	-	55	-
4a.1.4.4	Misc Cont Yard Structures	-	8	-	-	-	-	-	1	9	9	-	-	-	-	-	-	-	-	105	-
4a.1.4.5	North Warehouse	-	1	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	16	-
4a.1.4.6	Radwaste	-	26	-	-	-	-	-	4	30	30	-	-	-	-	-	-	-	-	318	-
4a.1.4.7	Radwaste Compactor	-	0	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	4	-
4a.1.4.8	Turbine	-	237	-	-	-	-	-	36	273	273	-	-	-	-	-	-	-	-	2,999	-
4a.1.4.9	Vent Stack	-	0	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	5	-
4a.1.4	Totals	-	1,062	-	-	-	-	-	159	1,222	1,222	-	-	-	-	-	-	-	-	12,771	-
Reactor Building System Components																					
4a.1.5.1	RX-BLD-213-2_2	-	134	6	18	85	54	-	63	360	360	-	-	1,492	237	-	-	-	80,793	2,496	-
4a.1.5.2	RX-BLD-213-3_2	-	118	4	12	59	29	-	48	270	270	-	-	1,043	130	-	-	-	53,400	2,210	-
4a.1.5.3	RX-BLD-213-4_2	-	123	3	8	37	23	-	44	238	238	-	-	658	102	-	-	-	35,392	2,305	-
4a.1.5.4	RX-BLD-213-5_2	-	219	16	46	201	144	-	129	755	755	-	-	3,531	637	-	-	-	197,501	4,086	-
4a.1.5.5	RX-BLD-232-2_2	-	111	8	22	93	69	-	63	366	366	-	-	1,640	307	-	-	-	92,729	2,073	-
4a.1.5.6	RX-BLD-232-3_2	-	100	7	20	88	65	-	58	339	339	-	-	1,556	287	-	-	-	87,560	1,875	-
4a.1.5.7	RX-BLD-232-4_2	-	49	1	3	13	8	-	17	91	91	-	-	225	37	-	-	-	12,298	888	-
4a.1.5.8	RX-BLD-232-5_2	-	55	2	5	26	15	-	22	125	125	-	-	449	68	-	-	-	24,053	990	-
4a.1.5.9	RX-BLD-252-10_2	-	9	0	0	2	-	-	3	14	14	-	-	38	-	-	-	-	1,538	170	-
4a.1.5.10	RX-BLD-252-1_2	-	7	0	0	2	-	-	2	10	10	-	-	27	-	-	-	-	1,086	119	-
4a.1.5.11	RX-BLD-252-1_3	-	3	0	0	-	1	-	1	5	5	-	-	-	5	-	-	-	427	52	-
4a.1.5.12	RX-BLD-252-2_2	-	35	2	7	29	23	-	20	116	116	-	-	502	100	-	-	-	28,864	651	-
4a.1.5.13	RX-BLD-252-3_2	-	44	1	3	16	4	-	15	82	82	-	-	276	16	-	-	-	12,590	823	-
4a.1.5.14	RX-BLD-252-3_3	-	2	0	0	-	2	-	1	6	6	-	-	-	10	-	-	-	863	40	-
4a.1.5.15	RX-BLD-252-4_2	-	92	2	13	102	-	-	41	251	251	-	-	1,796	-	-	-	-	72,928	1,733	-
4a.1.5.16	RX-BLD-252-4_3	-	1	0	0	-	1	-	0	2	2	-	-	-	3	-	-	-	234	14	-
4a.1.5.17	RX-BLD-252-5_2	-	229	3	20	156	-	-	84	492	492	-	-	2,738	-	-	-	-	111,209	4,207	-
4a.1.5.18	RX-BLD-252-5_3	-	103	11	13	-	97	-	53	277	277	-	-	-	427	-	-	-	36,281	1,647	-
4a.1.5.19	RX-BLD-252-6_2	-	191	3	15	116	-	-	68	392	392	-	-	2,045	-	-	-	-	83,064	3,496	-
4a.1.5.20	RX-BLD-252-6_3	-	106	12	14	-	104	-	56	292	292	-	-	-	459	-	-	-	39,016	1,712	-
4a.1.5.21	RX-BLD-252-7_2	-	172	1	8	62	-	-	54	297	297	-	-	1,094	-	-	-	-	44,442	3,163	-
4a.1.5.22	RX-BLD-252-8_2	-	52	1	3	26	-	-	18	100	100	-	-	463	-	-	-	-	18,797	954	-
4a.1.5.23	RX-BLD-252-9_2	-	86	1	5	29	7	-	28	156	156	-	-	511	29	-	-	-	23,198	1,579	-
4a.1.5.24	RX-BLD-252-9_3	-	19	2	4	-	27	-	12	65	65	-	-	-	121	-	-	-	10,281	339	-
4a.1.5	Totals	-	2,060	87	240	1,142	673	-	899	5,101	5,101	-	-	20,083	2,977	-	-	-	1,068,545	37,623	-
Turbine Building System Components																					
4a.1.6.1	TURB-BLD-222-10_2	-	97	1	5	42	-	-	31	176	176	-	-	735	-	-	-	-	29,859	1,836	-
4a.1.6.2	TURB-BLD-222-11_2	-	60	1	3	24	-	-	19	106	106	-	-	422	-	-	-	-	17,121	1,115	-

Table E-1
Vermont Yankee Nuclear Power Station
Scenario 5: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Turbine Building System Components (continued)																					
4a.1.6.3	TURB-BLD-222-1_2	-	388	9	53	412	-	-	168	1,030	1,030	-	-	7,245	-	-	-	-	294,230	7,209	-
4a.1.6.4	TURB-BLD-222-2_2	-	302	10	62	475	-	-	157	1,006	1,006	-	-	8,362	-	-	-	-	339,601	5,576	-
4a.1.6.5	TURB-BLD-222-3_2	-	86	3	16	119	-	-	42	265	265	-	-	2,101	-	-	-	-	85,320	1,579	-
4a.1.6.6	TURB-BLD-222-8_2	-	248	2	14	107	-	-	81	452	452	-	-	1,885	-	-	-	-	76,566	4,680	-
4a.1.6.7	TURB-BLD-222-9_2	-	141	11	66	510	-	-	123	851	851	-	-	8,970	-	-	-	-	364,295	2,629	-
4a.1.6.8	TURB-BLD-228-12_2	-	200	2	10	77	-	-	63	352	352	-	-	1,355	-	-	-	-	55,030	3,702	-
4a.1.6.9	TURB-BLD-228-13_2	-	130	1	5	38	-	-	39	212	212	-	-	666	-	-	-	-	27,061	2,432	-
4a.1.6.10	TURB-BLD-228-1_2	-	124	2	12	90	-	-	46	274	274	-	-	1,584	-	-	-	-	64,321	2,279	-
4a.1.6.11	TURB-BLD-228-2_2	-	365	14	84	650	-	-	203	1,317	1,317	-	-	11,437	-	-	-	-	464,451	6,827	-
4a.1.6.12	TURB-BLD-228-3_2	-	310	7	41	312	-	-	131	800	800	-	-	5,486	-	-	-	-	222,807	5,785	-
4a.1.6.13	TURB-BLD-228-4_2	-	345	8	47	362	-	-	148	910	910	-	-	6,374	-	-	-	-	258,860	6,410	-
4a.1.6.14	TURB-BLD-228-5_2	-	163	4	27	207	-	-	76	478	478	-	-	3,648	-	-	-	-	148,129	3,001	-
4a.1.6.15	TURB-BLD-228-6_2	-	135	4	23	175	-	-	64	400	400	-	-	3,075	-	-	-	-	124,888	2,491	-
4a.1.6	Totals	-	3,093	78	468	3,602	-	-	1,391	8,632	8,632	-	-	63,347	-	-	-	-	2,572,537	57,553	-
Augmented Offgas Building System Components																					
4a.1.7.1	AOG-BLD-FL1-1_2	-	31	0	2	17	-	-	11	61	61	-	-	293	-	-	-	-	11,904	569	-
4a.1.7.2	AOG-BLD-FL1-2_2	-	95	2	13	98	-	-	40	248	248	-	-	1,724	-	-	-	-	70,026	1,741	-
4a.1.7.3	AOG-BLD-FL1-3_2	-	94	2	12	89	-	-	39	236	236	-	-	1,572	-	-	-	-	63,838	1,690	-
4a.1.7.4	AOG-BLD-FL1-4_2	-	99	2	9	72	-	-	37	219	219	-	-	1,260	-	-	-	-	51,189	1,771	-
4a.1.7.5	AOG-BLD-FL1-5_2	-	98	1	6	48	-	-	33	186	186	-	-	849	-	-	-	-	34,481	1,796	-
4a.1.7.6	AOG-BLD-FL2-1_2	-	61	1	7	56	-	-	25	150	150	-	-	990	-	-	-	-	40,198	1,108	-
4a.1.7.7	AOG-BLD-FL2-2_2	-	7	0	0	3	-	-	2	13	13	-	-	55	-	-	-	-	2,232	133	-
4a.1.7.8	AOG-BLD-FL2-3_2	-	7	0	0	3	-	-	2	12	12	-	-	52	-	-	-	-	2,128	121	-
4a.1.7.9	AOG-BLD-FL2-4_2	-	52	1	7	55	-	-	22	138	138	-	-	965	-	-	-	-	39,196	947	-
4a.1.7.10	AOG-BLD-FL2-5_2	-	7	0	0	2	-	-	2	11	11	-	-	30	-	-	-	-	1,212	125	-
4a.1.7.11	AOG-BLD-FL2-6_2	-	6	0	0	3	-	-	2	12	12	-	-	52	-	-	-	-	2,128	114	-
4a.1.7.12	AOG-BLD-FL2-7_2	-	30	0	1	10	-	-	9	51	51	-	-	176	-	-	-	-	7,154	539	-
4a.1.7.13	AOG-BLD-FL2-8_2	-	15	0	1	6	-	-	5	26	26	-	-	101	-	-	-	-	4,118	263	-
4a.1.7.14	AOG-BLD-FL2-9_2	-	95	2	13	98	-	-	41	248	248	-	-	1,715	-	-	-	-	69,653	1,717	-
4a.1.7.15	AOG-BLDG-1_2	-	48	2	5	14	20	-	20	108	108	-	-	250	86	-	-	-	17,504	862	-
4a.1.7.16	AOG-BLDG-2_2	-	168	1	3	7	14	-	47	240	240	-	-	128	66	-	-	-	10,462	2,484	-
4a.1.7.17	AOG-BLDG-PENT_2	-	34	0	3	21	-	-	12	71	71	-	-	377	-	-	-	-	15,291	605	-
4a.1.7.18	AOG-BLDG-RF_2	-	73	2	10	78	-	-	32	195	195	-	-	1,375	-	-	-	-	55,841	1,292	-
4a.1.7	Totals	-	1,018	17	93	680	34	-	381	2,223	2,223	-	-	11,965	152	-	-	-	498,555	17,875	-
4a.1.8	Scaffolding in support of decommissioning	-	593	25	12	92	-	-	166	888	888	-	-	1,458	-	-	-	-	65,595	11,723	-
4a.1	Subtotal Period 4a Activity Costs	130	17,633	10,583	3,776	12,248	14,229	505	18,901	78,004	78,004	-	-	202,602	20,965	751	856	1,785	11,099,430	210,494	2,507
Period 4a Additional Costs																					
4a.2.1	Retired Low Presure Turbine Rotors	-	-	31	19	1,868	-	-	286	2,204	2,204	-	-	2,723	-	-	-	-	1,334,256	640	-
4a.2	Subtotal Period 4a Additional Costs	-	-	31	19	1,868	-	-	286	2,204	2,204	-	-	2,723	-	-	-	-	1,334,256	640	-
Period 4a Collateral Costs																					
4a.3.1	Process decommissioning water waste	5	-	4	33	-	33	-	16	93	93	-	-	-	83	-	-	-	4,966	16	-
4a.3.3	Small tool allowance	-	154	-	-	-	-	-	23	177	159	-	18	-	-	-	-	-	-	-	-
4a.3	Subtotal Period 4a Collateral Costs	5	154	4	33	-	33	-	39	269	252	-	18	-	83	-	-	-	4,966	16	-
Period 4a Period-Dependent Costs																					
4a.4.1	Decon supplies	52	-	-	-	-	-	-	13	65	65	-	-	-	-	-	-	-	-	-	-
4a.4.2	Insurance	-	-	-	-	-	-	534	53	587	587	-	-	-	-	-	-	-	-	-	-
4a.4.3	Property taxes	-	-	-	-	-	-	9	1	10	9	-	1	-	-	-	-	-	-	-	-
4a.4.4	Health physics supplies	-	1,114	-	-	-	-	-	279	1,393	1,393	-	-	-	-	-	-	-	-	-	-
4a.4.5	Heavy equipment rental	-	1,880	-	-	-	-	-	282	2,163	2,163	-	-	-	-	-	-	-	-	-	-
4a.4.6	Disposal of DAW generated	-	-	65	61	-	279	-	85	490	490	-	-	-	3,764	-	-	-	75,278	123	-
4a.4.7	Plant energy budget	-	-	-	-	-	-	1,423	213	1,636	1,636	-	-	-	-	-	-	-	-	-	-
4a.4.8	NRC Fees	-	-	-	-	-	-	639	64	703	703	-	-	-	-	-	-	-	-	-	-
4a.4.9	Site O&M	-	-	-	-	-	-	265	40	305	305	-	-	-	-	-	-	-	-	-	-
4a.4.10	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	495	74	569	569	-	-	-	-	-	-	-	-	-	-

Table E-1
Vermont Yankee Nuclear Power Station
Scenario 5: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 4a Period-Dependent Costs (continued)																					
4a.4.11	Corporate A&G	-	-	-	-	-	-	2,626	394	3,020	3,020	-	-	-	-	-	-	-	-	-	-
4a.4.12	Security Staff Cost	-	-	-	-	-	-	1,431	215	1,645	1,645	-	-	-	-	-	-	-	-	-	83,214
4a.4.13	DOC Staff Cost	-	-	-	-	-	-	15,540	2,331	17,871	17,871	-	-	-	-	-	-	-	-	-	183,737
4a.4.14	Utility Staff Cost	-	-	-	-	-	-	19,204	2,881	22,085	22,085	-	-	-	-	-	-	-	-	-	332,857
4a.4	Subtotal Period 4a Period-Dependent Costs	52	2,995	65	61	-	279	42,165	6,925	52,541	52,540	-	1	-	3,764	-	-	-	75,278	123	599,809
4a.0	TOTAL PERIOD 4a COST	187	20,782	10,683	3,889	14,116	14,542	42,670	26,151	133,019	133,000	-	19	205,325	24,812	751	856	1,785	12,513,930	211,273	602,315
PERIOD 4b - Site Decontamination																					
Reactor Building System Components																					
4b.1.2.1	RX-BLD-213-1_2	-	1,048	30	157	1,150	58	-	475	2,918	2,918	-	-	20,227	255	-	-	-	843,080	21,042	-
4b.1.2.2	RX-BLD-213-1_3	-	50	7	12	-	90	-	38	197	197	-	-	-	397	-	-	-	33,774	932	-
4b.1.2.3	RX-BLD-232-1_2	-	464	34	98	405	331	-	277	1,609	1,609	-	-	7,129	1,463	-	-	-	413,865	8,461	-
4b.1.2.4	RX-BLD-232-1_3	-	22	2	3	-	23	-	12	63	63	-	-	-	103	-	-	-	8,738	374	-
4b.1.2.5	RX-BLD-280-1_2	-	22	0	1	8	-	-	7	38	38	-	-	143	-	-	-	-	5,794	415	-
4b.1.2.6	RX-BLD-280-1_3	-	48	4	7	-	53	-	27	139	139	-	-	-	234	-	-	-	19,900	903	-
4b.1.2.7	RX-BLD-280-2_2	-	27	1	2	8	8	-	10	57	57	-	-	147	37	-	-	-	9,122	491	-
4b.1.2.8	RX-BLD-280-2_3	-	72	13	24	-	177	-	67	354	354	-	-	-	785	-	-	-	66,718	1,359	-
4b.1.2.9	RX-BLD-280-3_2	-	191	5	31	235	-	-	88	550	550	-	-	4,139	-	-	-	-	168,090	3,467	-
4b.1.2.10	RX-BLD-280-4_2	-	79	1	5	39	-	-	26	150	150	-	-	692	-	-	-	-	28,115	1,430	-
4b.1.2.11	RX-BLD-280-5_2	-	161	2	10	74	-	-	53	299	299	-	-	1,303	-	-	-	-	52,897	2,944	-
4b.1.2.12	RX-BLD-280-6_2	-	175	2	10	76	-	-	57	319	319	-	-	1,336	-	-	-	-	54,249	3,219	-
4b.1.2.13	RX-BLD-280-7_2	-	142	3	19	144	-	-	60	369	369	-	-	2,538	-	-	-	-	103,081	2,587	-
4b.1.2.14	RX-BLD-280-ROOF_2	-	26	2	11	86	-	-	21	147	147	-	-	1,519	-	-	-	-	61,692	476	-
4b.1.2.15	RX-BLD-303-1_2	-	39	1	3	16	9	-	15	83	83	-	-	279	38	-	-	-	14,546	749	-
4b.1.2.16	RX-BLD-303-1_3	-	134	25	40	-	295	-	116	610	610	-	-	-	1,307	-	-	-	111,075	2,513	-
4b.1.2.17	RX-BLD-303-2_3	-	57	7	10	-	72	-	34	179	179	-	-	-	381	-	-	-	26,893	1,063	-
4b.1.2.18	RX-BLD-303-3_3	-	20	1	1	-	10	-	8	41	41	-	-	-	45	-	-	-	3,831	381	-
4b.1.2.19	RX-BLD-303-4_2	-	191	4	24	185	-	-	80	484	484	-	-	3,258	-	-	-	-	132,305	3,439	-
4b.1.2.20	RX-BLD-303-5_2	-	20	0	1	7	-	-	6	34	34	-	-	116	-	-	-	-	4,694	376	-
4b.1.2.21	RX-BLD-303-6_2	-	11	0	0	3	-	-	3	18	18	-	-	56	-	-	-	-	2,262	210	-
4b.1.2.22	RX-BLD-303-7_2	-	82	1	9	67	-	-	32	191	191	-	-	1,178	-	-	-	-	47,837	1,510	-
4b.1.2.23	RX-BLD-303-7_3	-	21	3	5	-	35	-	15	79	79	-	-	-	157	-	-	-	13,334	364	-
4b.1.2.24	RX-BLD-303-8_2	-	73	1	5	40	-	-	25	143	143	-	-	697	-	-	-	-	28,313	1,300	-
4b.1.2.25	RX-BLD-318-1_3	-	17	1	2	-	12	-	8	39	39	-	-	-	60	-	-	-	4,371	327	-
4b.1.2.26	RX-BLD-318-2_3	-	33	3	3	-	24	-	15	78	78	-	-	-	106	-	-	-	9,021	585	-
4b.1.2.27	RX-BLD-318-3_3	-	25	2	3	-	21	-	12	62	62	-	-	-	92	-	-	-	7,792	444	-
4b.1.2.28	RX-BLD-318-4_2	-	512	7	45	343	-	-	187	1,093	1,093	-	-	6,034	-	-	-	-	245,044	9,436	-
4b.1.2.29	RX-BLD-318-4_3	-	13	1	2	-	15	-	7	39	39	-	-	-	66	-	-	-	5,636	221	-
4b.1.2.30	RX-BLD-318-5_2	-	90	2	9	72	-	-	35	207	207	-	-	1,260	-	-	-	-	51,163	1,625	-
4b.1.2.31	RX-BLD-318-6_2	-	49	0	3	23	-	-	16	91	91	-	-	408	-	-	-	-	16,581	833	-
4b.1.2.32	RX-BLD-318-7_2	-	40	1	4	29	-	-	15	88	88	-	-	503	-	-	-	-	20,423	722	-
4b.1.2.33	RX-BLD-345-1_3	-	267	1	1	-	7	-	69	345	345	-	-	-	31	-	-	-	2,619	5,186	-
4b.1.2.34	RX-BLD-345-2_3	-	188	0	0	-	2	-	47	237	237	-	-	-	7	-	-	-	631	3,647	-
4b.1.2.35	RX-BLD-345-3_2	-	411	0	1	9	-	-	104	525	525	-	-	152	-	-	-	-	6,168	7,967	-
4b.1.2.36	RX-BLD-345-3_3	-	5	1	1	-	7	-	3	17	17	-	-	-	32	-	-	-	2,760	91	-
4b.1.2.37	RX-BLD-345-4_2	-	5	0	0	1	-	-	1	7	7	-	-	9	-	-	-	-	380	91	-
4b.1.2.38	RX-BLD-345-5_2	-	47	1	4	30	-	-	17	99	99	-	-	535	-	-	-	-	21,741	844	-
4b.1.2.39	RX-BLD-345-6_2	-	60	1	3	24	-	-	19	107	107	-	-	425	-	-	-	-	17,249	1,107	-
4b.1.2.40	RX-BLD-345-7_2	-	35	1	3	25	-	-	13	77	77	-	-	434	-	-	-	-	17,613	638	-
4b.1.2.41	RX-BLD-345-8_2	-	37	0	2	19	-	-	12	70	70	-	-	326	-	-	-	-	13,225	653	-
4b.1.2.42	RX-BLD-DW_2	-	276	8	23	109	68	-	107	592	592	-	-	1,913	303	-	-	-	103,413	5,189	-
4b.1.2.43	RX-BLD-DW_3	-	491	129	197	-	1,446	-	527	2,790	2,790	-	-	-	6,396	-	-	-	543,518	9,060	-
4b.1.2	Totals	-	5,776	306	796	3,227	2,763	-	2,769	15,636	15,636	-	-	56,755	12,297	-	-	-	3,343,552	108,668	-
Turbine Building System Components																					
4b.1.3.1	TURB-BLD-232-1_2	-	127	2	10	77	-	-	45	262	262	-	-	1,363	-	-	-	-	55,351	2,391	-
4b.1.3.2	TURB-BLD-232-2_2	-	225	3	16	125	-	-	78	446	446	-	-	2,193	-	-	-	-	89,075	4,121	-
4b.1.3.3	TURB-BLD-232-3_2	-	143	1	7	55	-	-	45	252	252	-	-	975	-	-	-	-	39,615	2,624	-

Table E-1
Vermont Yankee Nuclear Power Station
Scenario 5: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Turbine Building System Components (continued)																					
4b.1.3.4	TURB-BLD-232-4_2	-	112	1	5	39	-	-	35	192	192	-	-	693	-	-	-	-	28,131	2,039	-
4b.1.3.5	TURB-BLD-232-5_2	-	150	1	9	67	-	-	49	276	276	-	-	1,175	-	-	-	-	47,717	2,772	-
4b.1.3.6	TURB-BLD-232-6_2	-	174	1	8	64	-	-	54	301	301	-	-	1,117	-	-	-	-	45,362	3,202	-
4b.1.3.7	TURB-BLD-232-7_2	-	117	1	6	43	-	-	36	202	202	-	-	751	-	-	-	-	30,484	2,154	-
4b.1.3.8	TURB-BLD-246-1_2	-	110	3	16	127	-	-	49	305	305	-	-	2,235	-	-	-	-	90,750	2,025	-
4b.1.3.9	TURB-BLD-248-1_2	-	110	2	11	88	-	-	42	253	253	-	-	1,542	-	-	-	-	62,614	2,048	-
4b.1.3.10	TURB-BLD-248-2_2	-	154	1	6	44	-	-	46	251	251	-	-	776	-	-	-	-	31,504	2,935	-
4b.1.3.11	TURB-BLD-248-3_2	-	287	8	49	379	-	-	137	860	860	-	-	6,672	-	-	-	-	270,947	5,319	-
4b.1.3.12	TURB-BLD-248-4_2	-	198	6	38	290	-	-	99	631	631	-	-	5,106	-	-	-	-	207,358	3,677	-
4b.1.3.13	TURB-BLD-248-5_2	-	51	1	5	42	-	-	20	120	120	-	-	744	-	-	-	-	30,197	936	-
4b.1.3.14	TURB-BLD-248-6_2	-	115	2	10	76	-	-	42	244	244	-	-	1,341	-	-	-	-	54,475	2,115	-
4b.1.3.15	TURB-BLD-248-7_2	-	71	2	12	89	-	-	33	206	206	-	-	1,567	-	-	-	-	63,655	1,306	-
4b.1.3.16	TURB-BLD-252-10_2	-	141	1	7	51	-	-	44	243	243	-	-	895	-	-	-	-	36,360	2,658	-
4b.1.3.17	TURB-BLD-252-13_2	-	123	1	5	36	-	-	37	201	201	-	-	626	-	-	-	-	25,426	2,252	-
4b.1.3.18	TURB-BLD-252-14_2	-	91	1	5	38	-	-	29	165	165	-	-	672	-	-	-	-	27,287	1,675	-
4b.1.3.19	TURB-BLD-252-1_2	-	89	3	18	137	-	-	46	293	293	-	-	2,414	-	-	-	-	98,015	1,605	-
4b.1.3.20	TURB-BLD-252-2_2	-	87	3	17	135	-	-	45	287	287	-	-	2,366	-	-	-	-	96,086	1,581	-
4b.1.3.21	TURB-BLD-252-3_2	-	21	0	1	11	-	-	7	41	41	-	-	196	-	-	-	-	7,972	379	-
4b.1.3.22	TURB-BLD-252-4_2	-	26	0	1	5	-	-	7	39	39	-	-	83	-	-	-	-	3,381	504	-
4b.1.3.23	TURB-BLD-252-5_2	-	178	1	8	58	-	-	54	299	299	-	-	1,021	-	-	-	-	41,454	3,373	-
4b.1.3.24	TURB-BLD-252-6_2	-	63	0	1	5	-	-	17	86	86	-	-	96	-	-	-	-	3,915	1,202	-
4b.1.3.25	TURB-BLD-252-7_2	-	73	2	14	104	-	-	36	229	229	-	-	1,831	-	-	-	-	74,360	1,194	-
4b.1.3.26	TURB-BLD-252-8_2	-	25	0	2	14	-	-	9	50	50	-	-	240	-	-	-	-	9,763	422	-
4b.1.3.27	TURB-BLD-252-9_2	-	104	2	15	119	-	-	46	288	288	-	-	2,095	-	-	-	-	85,062	1,739	-
4b.1.3.28	TURB-BLD-272-1_2	-	27	1	6	43	-	-	14	90	90	-	-	750	-	-	-	-	30,443	503	-
4b.1.3.29	TURB-BLD-272-3_2	-	324	3	18	139	-	-	105	588	588	-	-	2,442	-	-	-	-	99,166	5,817	-
4b.1.3.30	TURB-BLD-272-4_2	-	68	2	13	104	-	-	35	222	222	-	-	1,824	-	-	-	-	74,084	1,103	-
4b.1.3.31	TURB-BLD-272-5_2	-	51	1	9	68	-	-	24	154	154	-	-	1,199	-	-	-	-	48,693	776	-
4b.1.3.32	TURB-BLD-272-6_2	-	70	2	13	102	-	-	35	222	222	-	-	1,792	-	-	-	-	72,779	1,065	-
4b.1.3.33	TURB-BLD-272-9_0	-	12	-	-	-	-	-	2	13	-	-	13	-	-	-	-	-	-	212	-
4b.1.3	Totals	-	3,714	59	360	2,774	-	-	1,403	8,311	8,298	-	13	48,792	-	-	-	-	1,981,480	67,725	-
Control/Radwaste/Other Building System Components																					
4b.1.4.1	CONT-BLD-248-1_0	-	144	-	-	-	-	-	22	165	-	-	165	-	-	-	-	-	-	2,578	-
4b.1.4.2	CONT-BLD-248-1_2	-	1	0	0	1	-	-	0	2	2	-	-	9	-	-	-	-	372	10	-
4b.1.4.3	CONT-BLD-248-2_0	-	4	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	74	-
4b.1.4.4	CONT-BLD-262-1_0	-	110	-	-	-	-	-	16	126	-	-	126	-	-	-	-	-	-	1,974	-
4b.1.4.5	CONT-BLD-272-1_0	-	48	-	-	-	-	-	7	55	-	-	55	-	-	-	-	-	-	874	-
4b.1.4.6	CST-BASE-TRENCH_2	-	349	8	46	357	-	-	149	909	909	-	-	6,273	-	-	-	-	254,747	6,391	-
4b.1.4.7	CT_0	-	205	-	-	-	-	-	31	236	-	-	236	-	-	-	-	-	-	3,726	-
4b.1.4.8	DISCHARGE-STR_0	-	61	-	-	-	-	-	9	70	-	-	70	-	-	-	-	-	-	1,111	-
4b.1.4.9	DST-BASE_0	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	367	-
4b.1.4.10	INTAKE-STR_0	-	148	-	-	-	-	-	22	170	-	-	170	-	-	-	-	-	-	2,675	-
4b.1.4.11	NORTH-WAREHOUSE_2	-	26	0	1	9	-	-	8	45	45	-	-	165	-	-	-	-	6,694	477	-
4b.1.4.12	RW-BLD-230-1_3	-	93	12	18	-	133	-	60	317	317	-	-	-	721	-	-	-	50,021	1,745	-
4b.1.4.13	RW-BLD-230-2_3	-	122	18	26	-	191	-	84	441	441	-	-	-	1,051	-	-	-	71,955	2,282	-
4b.1.4.14	RW-BLD-230-3_3	-	53	5	7	-	51	-	28	143	143	-	-	-	238	-	-	-	19,202	974	-
4b.1.4.15	RW-BLD-230-4_3	-	37	4	6	-	46	-	22	116	116	-	-	-	249	-	-	-	17,241	697	-
4b.1.4.16	RW-BLD-230-5_3	-	29	3	4	-	32	-	16	84	84	-	-	-	171	-	-	-	12,002	545	-
4b.1.4.17	RW-BLD-230-7_3	-	141	12	18	-	134	-	73	378	378	-	-	-	594	-	-	-	50,458	2,509	-
4b.1.4.18	RW-BLD-246-8_2	-	40	2	3	5	18	-	16	83	83	-	-	92	79	-	-	-	10,493	712	-
4b.1.4.19	RW-BLD-252-10_2	-	13	0	0	3	-	-	4	21	21	-	-	52	-	-	-	-	2,100	257	-
4b.1.4.20	RW-BLD-252-11_2	-	12	0	1	7	-	-	4	24	24	-	-	120	-	-	-	-	4,869	222	-
4b.1.4.21	RW-BLD-252-12_2	-	90	1	9	67	-	-	34	201	201	-	-	1,179	-	-	-	-	47,870	1,614	-
4b.1.4.22	RW-BLD-252-13_2	-	73	2	7	47	8	-	29	166	166	-	-	819	44	-	-	-	36,442	1,321	-
4b.1.4.23	RW-BLD-252-1_2	-	63	0	2	16	-	-	19	100	100	-	-	283	-	-	-	-	11,513	1,203	-
4b.1.4.24	RW-BLD-252-2_2	-	35	1	4	20	11	-	15	87	87	-	-	344	49	-	-	-	18,159	665	-
4b.1.4.25	RW-BLD-252-3_2	-	15	0	1	5	-	-	5	25	25	-	-	86	-	-	-	-	3,500	282	-
4b.1.4.26	RW-BLD-252-4_2	-	25	0	1	9	-	-	8	43	43	-	-	150	-	-	-	-	6,078	481	-
4b.1.4.27	RW-BLD-252-5_2	-	37	0	3	20	-	-	13	72	72	-	-	351	-	-	-	-	14,258	666	-

Table E-1
Vermont Yankee Nuclear Power Station
Scenario 5: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Control/Radwaste/Other Building System Components (continued)																					
4b.1.4.28	RW-BLD-252-6_3	-	69	8	10	-	75	-	38	200	200	-	-	-	331	-	-	-	28,118	1,267	-
4b.1.4.29	RW-BLD-252-7_3	-	23	2	3	-	23	-	12	64	64	-	-	-	123	-	-	-	8,810	434	-
4b.1.4.30	RW-BLD-252-8_2	-	41	1	3	11	12	-	15	84	84	-	-	198	53	-	-	-	12,560	739	-
4b.1.4.31	RW-BLD-252-9_3	-	44	3	5	-	37	-	21	110	110	-	-	-	182	-	-	-	13,871	802	-
4b.1.4.32	RW-BLD-264-1_2	-	4	0	0	0	-	-	1	5	5	-	-	2	-	-	-	-	86	78	-
4b.1.4.33	RW-BLD-264-2_2	-	5	0	0	1	-	-	1	7	7	-	-	11	-	-	-	-	454	100	-
4b.1.4.34	RW-BLD-264-RF_2	-	16	0	1	8	1	-	6	32	32	-	-	135	5	-	-	-	5,877	305	-
4b.1.4.35	RW-BLD-280-1_2	-	11	0	1	8	-	-	4	25	25	-	-	142	-	-	-	-	5,769	220	-
4b.1.4.36	RW-BLD-280-2_2	-	9	0	0	2	-	-	2	13	13	-	-	27	-	-	-	-	1,082	166	-
4b.1.4.37	SERV-BLD-248-1_2	-	68	1	3	25	-	-	21	118	118	-	-	440	-	-	-	-	17,867	1,263	-
4b.1.4.38	STACK_2	-	64	1	4	33	-	-	22	124	124	-	-	584	-	-	-	-	23,712	1,147	-
4b.1.4.39	YARD-252-CONT_2	-	557	27	160	1,235	-	-	351	2,330	2,330	-	-	21,717	-	-	-	-	881,922	10,121	-
4b.1.4.40	YARD-252-CONT_3	-	44	4	6	-	44	-	23	122	122	-	-	-	195	-	-	-	16,564	713	-
4b.1.4.41	YARD-252_0	-	297	-	-	-	-	-	45	342	-	-	342	-	-	-	-	-	-	5,517	-
4b.1.4	Totals	-	3,246	117	356	1,886	817	-	1,260	7,683	6,490	-	1,193	33,178	4,085	-	-	-	1,654,669	59,299	-
4b.1.5	Scaffolding in support of decommissioning	-	890	38	18	138	-	-	250	1,332	1,332	-	-	2,187	-	-	-	-	98,393	17,585	-
Decontamination of Site Buildings																					
4b.1.6.1	Reactor	2,225	1,213	131	436	2,865	243	-	1,985	9,098	9,098	-	-	50,400	4,240	-	-	-	2,314,493	56,618	-
4b.1.6.2	AOG	98	49	1	17	1	25	-	70	261	261	-	-	23	474	-	-	-	41,966	2,308	-
4b.1.6.3	Control	1	1	0	0	-	0	-	1	3	3	-	-	-	9	-	-	-	786	23	-
4b.1.6.4	Equipment Lock	7	1	0	2	-	2	-	5	17	17	-	-	-	43	-	-	-	3,708	127	-
4b.1.6.5	LLRW	1	-	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	11	-
4b.1.6.6	Misc Cont Yard Structures	96	97	2	29	-	44	-	88	355	355	-	-	-	825	-	-	-	71,454	3,044	-
4b.1.6.7	North Warehouse	35	4	0	5	-	7	-	21	71	71	-	-	-	131	-	-	-	11,310	600	-
4b.1.6.8	Radwaste	73	73	2	26	2	40	-	69	286	286	-	-	44	760	-	-	-	66,006	2,271	-
4b.1.6.9	Radwaste Compactor	3	5	0	2	-	3	-	4	16	16	-	-	-	52	-	-	-	4,494	124	-
4b.1.6.10	Service	1	9	0	3	-	5	-	4	22	22	-	-	-	88	-	-	-	7,662	148	-
4b.1.6.11	Turbine	551	236	9	112	95	154	-	405	1,563	1,563	-	-	1,673	2,908	-	-	-	316,622	12,330	-
4b.1.6.12	Vent Stack	3	30	1	11	-	16	-	15	75	75	-	-	-	305	-	-	-	26,448	510	-
4b.1.6.13	Reactor (post fuel)	159	369	29	491	44	729	-	437	2,258	2,258	-	-	768	13,783	-	-	-	1,223,993	8,113	-
4b.1.6	Totals	3,252	2,086	175	1,133	3,008	1,269	-	3,103	14,026	14,026	-	-	52,908	23,619	-	-	-	4,088,943	86,227	-
4b.1	Subtotal Period 4b Activity Costs	3,252	15,712	694	2,663	11,033	4,849	-	8,785	46,989	45,783	-	1,206	193,819	40,001	-	-	-	11,167,040	339,504	-
Period 4b Additional Costs																					
4b.2.1	Remedial Action Support Surveys	-	-	-	-	-	-	3,043	913	3,955	3,955	-	-	-	-	-	-	-	-	20,800	-
4b.2.2	Soil Remediation	-	166	52	5,557	-	7,786	-	2,826	16,386	16,386	-	-	-	142,773	-	-	-	12,849,600	3,402	-
4b.2.3	ISFSI License Termination	-	33	5	32	-	75	1,280	224	1,648	-	1,648	-	-	1,231	-	-	-	102,129	3,165	2,560
4b.2.4	Underground Services Excavations	-	1,365	-	-	-	-	-	205	1,569	1,569	-	-	-	-	-	-	-	-	15,911	-
4b.2.5	Asbestos Remediation	-	1,082	3	138	-	602	-	442	2,268	2,268	-	-	-	9,938	-	-	-	129,188	13,287	-
4b.2.6	Septic Field Removal	-	-	-	-	-	-	1,724	259	1,983	1,983	-	-	-	-	-	-	-	-	-	-
4b.2	Subtotal Period 4b Additional Costs	-	2,645	59	5,728	-	8,463	6,047	4,869	27,810	26,162	1,648	-	-	153,942	-	-	-	13,080,920	56,565	2,560
Period 4b Collateral Costs																					
4b.3.1	Process decommissioning water waste	12	-	11	83	-	82	-	40	229	229	-	-	-	205	-	-	-	12,306	40	-
4b.3.3	Small tool allowance	-	268	-	-	-	-	-	40	308	308	-	-	-	-	-	-	-	-	-	-
4b.3.4	Decommissioning Equipment Disposition	-	-	115	67	420	-	-	84	686	686	-	-	6,667	-	-	-	-	300,000	88	-
4b.3.5	On-site survey and release of 25.85 tons clean metallic waste	-	-	-	-	-	-	28	3	31	31	-	-	-	-	-	-	-	-	-	-
4b.3	Subtotal Period 4b Collateral Costs	12	268	126	150	420	82	28	168	1,254	1,254	-	-	6,667	205	-	-	-	312,306	128	-
Period 4b Period-Dependent Costs																					
4b.4.1	Decon supplies	1,365	-	-	-	-	-	-	341	1,706	1,706	-	-	-	-	-	-	-	-	-	-
4b.4.2	Insurance	-	-	-	-	-	-	1,028	103	1,131	1,131	-	-	-	-	-	-	-	-	-	-
4b.4.3	Property taxes	-	-	-	-	-	-	17	2	18	18	-	-	-	-	-	-	-	-	-	-
4b.4.4	Health physics supplies	-	2,101	-	-	-	-	-	525	2,626	2,626	-	-	-	-	-	-	-	-	-	-
4b.4.5	Heavy equipment rental	-	3,595	-	-	-	-	-	539	4,134	4,134	-	-	-	-	-	-	-	-	-	-
4b.4.6	Disposal of DAW generated	-	-	103	96	-	444	-	136	779	779	-	-	-	5,986	-	-	-	119,715	195	-
4b.4.7	Plant energy budget	-	-	-	-	-	-	2,164	325	2,489	2,489	-	-	-	-	-	-	-	-	-	-

Table E-1
Vermont Yankee Nuclear Power Station
Scenario 5: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 4b Period-Dependent Costs (continued)																					
4b.4.8	NRC Fees	-	-	-	-	-	-	1,231	123	1,354	1,354	-	-	-	-	-	-	-	-	-	-
4b.4.9	Site O&M	-	-	-	-	-	-	511	77	588	588	-	-	-	-	-	-	-	-	-	-
4b.4.10	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	954	143	1,097	1,097	-	-	-	-	-	-	-	-	-	-
4b.4.11	Corporate A&G	-	-	-	-	-	-	4,836	725	5,561	5,561	-	-	-	-	-	-	-	-	-	-
4b.4.12	Security Staff Cost	-	-	-	-	-	-	2,757	414	3,170	3,170	-	-	-	-	-	-	-	-	-	160,357
4b.4.13	DOC Staff Cost	-	-	-	-	-	-	29,269	4,390	33,659	33,659	-	-	-	-	-	-	-	-	-	343,806
4b.4.14	Utility Staff Cost	-	-	-	-	-	-	35,158	5,274	40,431	40,431	-	-	-	-	-	-	-	-	-	605,509
4b.4	Subtotal Period 4b Period-Dependent Costs	1,365	5,695	103	96	-	444	77,924	13,116	98,744	98,744	-	-	-	5,986	-	-	-	119,715	195	1,109,671
4b.0	TOTAL PERIOD 4b COST	4,629	24,320	982	8,637	11,453	13,838	83,999	26,938	174,797	171,943	1,648	1,206	200,486	200,134	-	-	-	24,679,980	396,392	1,112,231
PERIOD 4f - License Termination																					
Period 4f Direct Decommissioning Activities																					
4f.1.1	ORISE confirmatory survey	-	-	-	-	-	-	149	45	194	194	-	-	-	-	-	-	-	-	-	-
4f.1.2	Terminate license									a											
4f.1	Subtotal Period 4f Activity Costs	-	-	-	-	-	-	149	45	194	194	-	-	-	-	-	-	-	-	-	-
Period 4f Additional Costs																					
4f.2.1	License Termination Survey	-	-	-	-	-	-	5,451	1,635	7,087	7,087	-	-	-	-	-	-	-	-	64,820	-
4f.2.2	Confirmation and Verification Survey	-	-	-	-	-	-	1,651	495	2,146	2,146	-	-	-	-	-	-	-	-	9,784	-
4f.2	Subtotal Period 4f Additional Costs	-	-	-	-	-	-	7,102	2,131	9,232	9,232	-	-	-	-	-	-	-	-	74,604	-
Period 4f Collateral Costs																					
4f.3.1	DOC staff relocation expenses	-	-	-	-	-	-	1,030	154	1,184	1,184	-	-	-	-	-	-	-	-	-	-
4f.3	Subtotal Period 4f Collateral Costs	-	-	-	-	-	-	1,030	154	1,184	1,184	-	-	-	-	-	-	-	-	-	-
Period 4f Period-Dependent Costs																					
4f.4.1	Insurance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4f.4.2	Property taxes	-	-	-	-	-	-	5	1	6	6	-	-	-	-	-	-	-	-	-	-
4f.4.3	Health physics supplies	-	447	-	-	-	-	-	112	559	559	-	-	-	-	-	-	-	-	-	-
4f.4.4	Disposal of DAW generated	-	-	6	6	-	26	-	8	45	45	-	-	-	345	-	-	-	6,897	11	-
4f.4.5	Plant energy budget	-	-	-	-	-	-	174	26	200	200	-	-	-	-	-	-	-	-	-	-
4f.4.6	NRC Fees	-	-	-	-	-	-	371	37	408	408	-	-	-	-	-	-	-	-	-	-
4f.4.7	Site O&M	-	-	-	-	-	-	154	23	177	177	-	-	-	-	-	-	-	-	-	-
4f.4.8	Corporate A&G	-	-	-	-	-	-	921	138	1,059	1,059	-	-	-	-	-	-	-	-	-	-
4f.4.9	Security Staff Cost	-	-	-	-	-	-	318	48	366	366	-	-	-	-	-	-	-	-	-	18,514
4f.4.10	DOC Staff Cost	-	-	-	-	-	-	4,903	735	5,638	5,638	-	-	-	-	-	-	-	-	-	56,314
4f.4.11	Utility Staff Cost	-	-	-	-	-	-	4,789	718	5,507	5,507	-	-	-	-	-	-	-	-	-	73,286
4f.4	Subtotal Period 4f Period-Dependent Costs	-	447	6	6	-	26	11,634	1,846	13,964	13,964	-	-	-	345	-	-	-	6,897	11	148,114
4f.0	TOTAL PERIOD 4f COST	-	447	6	6	-	26	19,914	4,176	24,574	24,574	-	-	-	345	-	-	-	6,897	74,615	148,114
PERIOD 4 TOTALS		4,816	45,549	11,671	12,532	25,569	28,406	146,583	57,264	332,389	329,516	1,648	1,225	405,811	225,290	751	856	1,785	37,200,800	682,280	1,862,661
PERIOD 5b - Site Restoration																					
Period 5b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
5b.1.1.1	Reactor	-	4,030	-	-	-	-	-	605	4,635	-	-	4,635	-	-	-	-	-	-	47,743	-
5b.1.1.2	AOG	-	1,617	-	-	-	-	-	243	1,859	-	-	1,859	-	-	-	-	-	-	19,704	-
5b.1.1.3	Bottle Storage Shed	-	6	-	-	-	-	-	1	7	-	-	7	-	-	-	-	-	-	81	-
5b.1.1.4	Construction Office	-	58	-	-	-	-	-	9	67	-	-	67	-	-	-	-	-	-	961	-
5b.1.1.5	Control	-	174	-	-	-	-	-	26	200	-	-	200	-	-	-	-	-	-	2,292	-
5b.1.1.6	Control Access	-	35	-	-	-	-	-	5	40	-	-	40	-	-	-	-	-	-	549	-
5b.1.1.7	Cooling Towers	-	1,857	-	-	-	-	-	279	2,136	-	-	2,136	-	-	-	-	-	-	30,896	-
5b.1.1.8	Discharge & Aerating Structures	-	207	-	-	-	-	-	31	238	-	-	238	-	-	-	-	-	-	1,615	-
5b.1.1.9	Equipment Lock	-	76	-	-	-	-	-	11	87	-	-	87	-	-	-	-	-	-	1,039	-
5b.1.1.10	Gatehouse 1	-	10	-	-	-	-	-	2	12	-	-	12	-	-	-	-	-	-	148	-

Table E-1
Vermont Yankee Nuclear Power Station
Scenario 5: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Demolition of Remaining Site Buildings (continued)																					
5b.1.1.11	Gatehouse 2	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	287	-
5b.1.1.12	Intake Structure	-	372	-	-	-	-	-	56	427	-	-	427	-	-	-	-	-	-	4,004	-
5b.1.1.13	LLRW	-	77	-	-	-	-	-	12	89	-	-	89	-	-	-	-	-	-	1,126	-
5b.1.1.14	Misc Cont Yard Structures	-	143	-	-	-	-	-	21	164	-	-	164	-	-	-	-	-	-	1,992	-
5b.1.1.15	Misc Yard Structures	-	501	-	-	-	-	-	75	576	-	-	576	-	-	-	-	-	-	6,685	-
5b.1.1.16	New Warehouse	-	257	-	-	-	-	-	39	296	-	-	296	-	-	-	-	-	-	4,052	-
5b.1.1.17	North Warehouse	-	56	-	-	-	-	-	8	64	-	-	64	-	-	-	-	-	-	649	-
5b.1.1.18	Office Area (Turbine Bldg)	-	102	-	-	-	-	-	15	117	-	-	117	-	-	-	-	-	-	1,530	-
5b.1.1.19	Piping and Excavations	-	967	-	-	-	-	-	145	1,112	-	-	1,112	-	-	-	-	-	-	4,877	-
5b.1.1.20	Radwaste	-	238	-	-	-	-	-	36	273	-	-	273	-	-	-	-	-	-	2,964	-
5b.1.1.21	Radwaste Compactor	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	70	-
5b.1.1.22	Security Modifications	-	518	-	-	-	-	-	78	596	-	-	596	-	-	-	-	-	-	4,901	-
5b.1.1.23	Service	-	62	-	-	-	-	-	9	71	-	-	71	-	-	-	-	-	-	949	-
5b.1.1.24	Turbine	-	2,318	-	-	-	-	-	348	2,665	-	-	2,665	-	-	-	-	-	-	30,292	-
5b.1.1.25	Turbine Pedestal	-	480	-	-	-	-	-	72	552	-	-	552	-	-	-	-	-	-	5,277	-
5b.1.1.26	Turbine Storage Facility	-	112	-	-	-	-	-	17	128	-	-	128	-	-	-	-	-	-	1,986	-
5b.1.1.27	Vent Stack	-	8	-	-	-	-	-	1	10	-	-	10	-	-	-	-	-	-	126	-
5b.1.1.28	Reactor (post fuel)	-	31	-	-	-	-	-	5	35	-	-	35	-	-	-	-	-	-	535	-
5b.1.1	Totals	-	14,336	-	-	-	-	-	2,150	16,487	-	-	16,487	-	-	-	-	-	-	177,331	-
Site Closeout Activities																					
5b.1.2	Grade & landscape site	-	457	-	-	-	-	-	69	526	-	-	526	-	-	-	-	-	-	1,052	-
5b.1.3	Final report to NRC	-	-	-	-	-	-	183	27	210	210	-	-	-	-	-	-	-	-	-	1,560
5b.1	Subtotal Period 5b Activity Costs	-	14,794	-	-	-	-	183	2,246	17,223	210	-	17,013	-	-	-	-	-	-	178,383	1,560
Period 5b Additional Costs																					
5b.2.1	Concrete Processing	-	435	-	313	-	-	567	197	1,512	-	-	1,512	-	-	-	-	-	-	2,402	-
5b.2.2	ISFSI Demolitions and Site Restoration	-	1,298	-	-	-	-	78	206	1,582	-	1,582	-	-	-	-	-	-	-	17,348	160
5b.2.3	Intake & Discharge Cofferdams	-	621	-	-	-	-	-	93	714	-	-	714	-	-	-	-	-	-	6,400	-
5b.2.4	Backfill Underground Services Excavation	-	2,450	-	-	-	-	-	367	2,817	-	-	2,817	-	-	-	-	-	-	8,066	-
5b.2.5	Backfill Structures	-	1,931	-	-	-	-	-	290	2,220	-	-	2,220	-	-	-	-	-	-	6,358	-
5b.2	Subtotal Period 5b Additional Costs	-	6,734	-	313	-	-	645	1,154	8,846	-	1,582	7,263	-	-	-	-	-	-	40,574	160
Period 5b Collateral Costs																					
5b.3.1	Small tool allowance	-	168	-	-	-	-	-	25	194	-	-	194	-	-	-	-	-	-	-	-
5b.3.2	Site O&M	-	-	-	-	-	-	208	31	239	-	-	239	-	-	-	-	-	-	-	-
5b.3	Subtotal Period 5b Collateral Costs	-	168	-	-	-	-	208	56	433	-	-	433	-	-	-	-	-	-	-	-
Period 5b Period-Dependent Costs																					
5b.4.1	Insurance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5b.4.2	Property taxes	-	-	-	-	-	-	10	1	11	-	-	11	-	-	-	-	-	-	-	-
5b.4.3	Heavy equipment rental	-	3,144	-	-	-	-	-	472	3,615	-	-	3,615	-	-	-	-	-	-	-	-
5b.4.4	Plant energy budget	-	-	-	-	-	-	176	26	203	-	-	203	-	-	-	-	-	-	-	-
5b.4.5	Corporate A&G	-	-	-	-	-	-	464	70	533	-	-	533	-	-	-	-	-	-	-	-
5b.4.6	Security Staff Cost	-	-	-	-	-	-	646	97	743	-	-	743	-	-	-	-	-	-	-	37,577
5b.4.7	DOC Staff Cost	-	-	-	-	-	-	9,655	1,448	11,103	-	-	11,103	-	-	-	-	-	-	-	106,469
5b.4.8	Utility Staff Cost	-	-	-	-	-	-	4,083	612	4,695	-	-	4,695	-	-	-	-	-	-	-	61,063
5b.4	Subtotal Period 5b Period-Dependent Costs	-	3,144	-	-	-	-	15,033	2,726	20,903	-	-	20,903	-	-	-	-	-	-	-	205,109
5b.0	TOTAL PERIOD 5b COST	-	24,839	-	313	-	-	16,069	6,183	47,404	210	1,582	45,612	-	-	-	-	-	-	218,957	206,829
PERIOD 5 TOTALS		-	24,839	-	313	-	-	16,069	6,183	47,404	210	1,582	45,612	-	-	-	-	-	-	218,957	206,829
TOTAL COST TO DECOMMISSION		**12,076**	**79,804**	**12,465**	**15,740**	**27,261**	**33,737**	**647,454**	**141,347**	**969,883**	**653,115**	**268,976**	**47,792**	**409,099**	**257,294**	**751**	**856**	**1,785**	**38,894,980**	**992,177**	**7,751,836**

Table E-1
Vermont Yankee Nuclear Power Station
Scenario 5: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2060
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours

TOTAL COST TO DECOMMISSION WITH 17.06% CONTINGENCY:	$969,883	thousands of 2011 dollars
TOTAL NRC LICENSE TERMINATION COST IS 67.34% OR:	$653,115	thousands of 2011 dollars
SPENT FUEL MANAGEMENT COST IS 27.73% OR:	$268,976	thousands of 2011 dollars
NON-NUCLEAR DEMOLITION COST IS 4.93% OR:	$47,792	thousands of 2011 dollars
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC):	258,900	cubic feet
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED:	1,785	cubic feet
TOTAL SCRAP METAL REMOVED:	19,091	tons
TOTAL CRAFT LABOR REQUIREMENTS:	992,177	man-hours

End Notes:
n/a - indicates that this activity not charged as decommissioning expense.
a - indicates that this activity performed by decommissioning staff.
0 - indicates that this value is less than 0.5 but is non-zero.
a cell containing " - " indicates a zero value

Table E-2
Vermont Yankee Nuclear Power Station
Scenario 6: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a.1.1	SAFSTOR site characterization survey	-	-	-	-	-	-	295	89	384	384	-	-	-	-	-	-	-	-	-	-
1a.1.2	Prepare preliminary decommissioning cost	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
1a.1.3	Notification of Cessation of Operations									a											
1a.1.4	Remove fuel & source material									n/a											
1a.1.5	Notification of Permanent Defueling									a											
1a.1.6	Deactivate plant systems & process waste									a											
1a.1.7	Prepare and submit PSDAR	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1a.1.8	Review plant dwgs & specs.	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
1a.1.9	Perform detailed rad survey									a											
1a.1.10	Estimate by-product inventory	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.11	End product description	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.12	Detailed by-product inventory	-	-	-	-	-	-	176	26	202	202	-	-	-	-	-	-	-	-	-	1,500
1a.1.13	Define major work sequence	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
1a.1.14	Perform SER and EA	-	-	-	-	-	-	363	54	417	417	-	-	-	-	-	-	-	-	-	3,100
1a.1.15	Perform Site-Specific Cost Study	-	-	-	-	-	-	585	88	673	673	-	-	-	-	-	-	-	-	-	5,000
Activity Specifications																					
1a.1.16.1	Prepare plant and facilities for SAFSTOR	-	-	-	-	-	-	576	86	662	662	-	-	-	-	-	-	-	-	-	4,920
1a.1.16.2	Plant systems	-	-	-	-	-	-	488	73	561	561	-	-	-	-	-	-	-	-	-	4,167
1a.1.16.3	Plant structures and buildings	-	-	-	-	-	-	365	55	420	420	-	-	-	-	-	-	-	-	-	3,120
1a.1.16.4	Waste management	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1a.1.16.5	Facility and site dormancy	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
1a.1.16	Total	-	-	-	-	-	-	1,897	285	2,182	2,182	-	-	-	-	-	-	-	-	-	16,207
Detailed Work Procedures																					
1a.1.17.1	Plant systems	-	-	-	-	-	-	138	21	159	159	-	-	-	-	-	-	-	-	-	1,183
1a.1.17.2	Facility closeout & dormancy	-	-	-	-	-	-	140	21	162	162	-	-	-	-	-	-	-	-	-	1,200
1a.1.17	Total	-	-	-	-	-	-	279	42	321	321	-	-	-	-	-	-	-	-	-	2,383
1a.1.18	Procure vacuum drying system	-	-	-	-	-	-	12	2	13	13	-	-	-	-	-	-	-	-	-	100
1a.1.19	Drain/de-energize non-cont. systems									a											
1a.1.20	Drain & dry NSSS									a											
1a.1.21	Drain/de-energize contaminated systems									a											
1a.1.22	Decon/secure contaminated systems									a											
1a.1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	4,496	719	5,215	5,215	-	-	-	-	-	-	-	-	-	35,890
Period 1a Collateral Costs																					
1a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	47,437	7,116	54,553	-	54,553	-	-	-	-	-	-	-	-	-
1a.3	Subtotal Period 1a Collateral Costs	-	-	-	-	-	-	47,437	7,116	54,553	-	54,553	-	-	-	-	-	-	-	-	-
Period 1a Period-Dependent Costs																					
1a.4.1	Insurance	-	-	-	-	-	-	857	86	943	943	-	-	-	-	-	-	-	-	-	-
1a.4.2	Property taxes	-	-	-	-	-	-	7	1	7	7	-	-	-	-	-	-	-	-	-	-
1a.4.3	Health physics supplies	-	347	-	-	-	-	-	87	433	433	-	-	-	-	-	-	-	-	-	-
1a.4.4	Heavy equipment rental	-	338	-	-	-	-	-	51	389	389	-	-	-	-	-	-	-	-	-	-
1a.4.5	Disposal of DAW generated	-	-	11	10	-	45	-	14	79	79	-	-	-	610	-	-	-	12,190	20	-
1a.4.6	Plant energy budget	-	-	-	-	-	-	1,173	176	1,349	1,349	-	-	-	-	-	-	-	-	-	-
1a.4.7	NRC Fees	-	-	-	-	-	-	809	81	890	890	-	-	-	-	-	-	-	-	-	-
1a.4.8	Emergency Planning Fees	-	-	-	-	-	-	4,660	466	5,126	-	5,126	-	-	-	-	-	-	-	-	-
1a.4.9	Site O&M	-	-	-	-	-	-	208	31	239	239	-	-	-	-	-	-	-	-	-	-
1a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	763	114	878	-	878	-	-	-	-	-	-	-	-	-
1a.4.11	ISFSI Operating Costs	-	-	-	-	-	-	89	13	103	-	103	-	-	-	-	-	-	-	-	-
1a.4.12	Corporate A&G	-	-	-	-	-	-	8,708	1,306	10,014	10,014	-	-	-	-	-	-	-	-	-	-
1a.4.13	Security Staff Cost	-	-	-	-	-	-	5,097	765	5,862	5,862	-	-	-	-	-	-	-	-	-	157,471
1a.4.14	Utility Staff Cost	-	-	-	-	-	-	24,094	3,614	27,708	27,708	-	-	-	-	-	-	-	-	-	423,400
1a.4	Subtotal Period 1a Period-Dependent Costs	-	685	11	10	-	45	46,464	6,804	54,019	47,913	6,106	-	-	610	-	-	-	12,190	20	580,871
1a.0	TOTAL PERIOD 1a COST	-	685	11	10	-	45	98,398	14,639	113,787	53,128	60,659	-	-	610	-	-	-	12,190	20	616,761

Table E-2
Vermont Yankee Nuclear Power Station
Scenario 6: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1b - SAFSTOR Limited DECON Activities																					
Period 1b Direct Decommissioning Activities																					
Decontamination of Site Buildings																					
1b.1.1.1	Reactor	2,212	-	-	-	-	-	-	1,106	3,318	3,318	-	-	-	-	-	-	-	-	35,257	-
1b.1.1.2	AOG	93	-	-	-	-	-	-	47	140	140	-	-	-	-	-	-	-	-	1,486	-
1b.1.1.3	Equipment Lock	7	-	-	-	-	-	-	3	10	10	-	-	-	-	-	-	-	-	108	-
1b.1.1.4	LLRW	1	-	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	11	-
1b.1.1.5	Misc Cont Yard Structures	85	-	-	-	-	-	-	43	128	128	-	-	-	-	-	-	-	-	1,359	-
1b.1.1.6	North Warehouse	34	-	-	-	-	-	-	17	51	51	-	-	-	-	-	-	-	-	544	-
1b.1.1.7	Radwaste	65	-	-	-	-	-	-	32	97	97	-	-	-	-	-	-	-	-	1,033	-
1b.1.1.8	Radwaste Compactor	2	-	-	-	-	-	-	1	3	3	-	-	-	-	-	-	-	-	36	-
1b.1.1.9	Turbine	531	-	-	-	-	-	-	265	796	796	-	-	-	-	-	-	-	-	8,452	-
1b.1.1.10	Reactor (post fuel)	158	-	-	-	-	-	-	79	236	236	-	-	-	-	-	-	-	-	2,511	-
1b.1.1	Totals	3,188	-	-	-	-	-	-	1,594	4,781	4,781	-	-	-	-	-	-	-	-	50,798	-
1b.1	Subtotal Period 1b Activity Costs	3,188	-	-	-	-	-	-	1,594	4,781	4,781	-	-	-	-	-	-	-	-	50,798	-
Period 1b Additional Costs																					
1b.2.1	Spent Fuel Pool Isolation	-	-	-	-	-	-	10,280	1,542	11,822	11,822	-	-	-	-	-	-	-	-	-	-
1b.2.2	Asbestos Remediation	-	1,644	30	177	-	602	67	601	3,121	3,121	-	-	-	9,938	-	-	-	129,188	13,287	-
1b.2.3	Operational Waste	406	-	139	1,052	-	1,045	-	636	3,277	3,277	-	-	-	2,600	-	-	-	156,000	507	-
1b.2.4	Hazardous Waste	-	-	197	95	1,692	-	-	288	2,271	2,271	-	-	3,288	-	-	-	-	354,266	1,619	-
1b.2	Subtotal Period 1b Additional Costs	406	1,644	366	1,323	1,692	1,647	10,347	3,067	20,491	20,491	-	-	3,288	12,538	-	-	-	639,454	15,413	-
Period 1b Collateral Costs																					
1b.3.1	Decon equipment	667	-	-	-	-	-	-	100	767	767	-	-	-	-	-	-	-	-	-	-
1b.3.2	Process decommissioning water waste	267	-	90	681	-	677	-	414	2,128	2,128	-	-	-	1,684	-	-	-	101,021	328	-
1b.3.4	Small tool allowance	-	60	-	-	-	-	-	9	69	69	-	-	-	-	-	-	-	-	-	-
1b.3.5	Spent Fuel Capital and Transfer	-	-	-	-	-	-	2,359	354	2,713	-	2,713	-	-	-	-	-	-	-	-	-
1b.3	Subtotal Period 1b Collateral Costs	933	60	90	681	-	677	2,359	877	5,677	2,964	2,713	-	-	1,684	-	-	-	101,021	328	-
Period 1b Period-Dependent Costs																					
1b.4.1	Decon supplies	1,275	-	-	-	-	-	-	319	1,593	1,593	-	-	-	-	-	-	-	-	-	-
1b.4.2	Insurance	-	-	-	-	-	-	105	11	116	116	-	-	-	-	-	-	-	-	-	-
1b.4.3	Property taxes	-	-	-	-	-	-	2	0	2	2	-	-	-	-	-	-	-	-	-	-
1b.4.4	Health physics supplies	-	301	-	-	-	-	-	75	376	376	-	-	-	-	-	-	-	-	-	-
1b.4.5	Heavy equipment rental	-	85	-	-	-	-	-	13	98	98	-	-	-	-	-	-	-	-	-	-
1b.4.6	Disposal of DAW generated	-	-	8	7	-	35	-	11	61	61	-	-	-	466	-	-	-	9,315	15	-
1b.4.7	Plant energy budget	-	-	-	-	-	-	296	44	340	340	-	-	-	-	-	-	-	-	-	-
1b.4.8	NRC Fees	-	-	-	-	-	-	146	15	161	161	-	-	-	-	-	-	-	-	-	-
1b.4.9	Emergency Planning Fees	-	-	-	-	-	-	1,032	103	1,136	-	1,136	-	-	-	-	-	-	-	-	-
1b.4.10	Site O&M	-	-	-	-	-	-	52	8	60	60	-	-	-	-	-	-	-	-	-	-
1b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	192	29	221	-	221	-	-	-	-	-	-	-	-	-
1b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	23	3	26	-	26	-	-	-	-	-	-	-	-	-
1b.4.13	Corporate A&G	-	-	-	-	-	-	1,090	164	1,254	1,254	-	-	-	-	-	-	-	-	-	-
1b.4.14	Security Staff Cost	-	-	-	-	-	-	1,285	193	1,478	1,478	-	-	-	-	-	-	-	-	-	39,691
1b.4.15	Utility Staff Cost	-	-	-	-	-	-	6,073	911	6,984	6,984	-	-	-	-	-	-	-	-	-	106,720
1b.4	Subtotal Period 1b Period-Dependent Costs	1,275	386	8	7	-	35	10,297	1,898	13,905	12,523	1,383	-	-	466	-	-	-	9,315	15	146,411
1b.0	TOTAL PERIOD 1b COST	5,801	2,091	464	2,012	1,692	2,359	23,002	7,434	44,855	40,760	4,095	-	3,288	14,687	-	-	-	749,790	66,554	146,411
PERIOD 1c - Preparations for SAFSTOR Dormancy																					
Period 1c Direct Decommissioning Activities																					
1c.1.1	Prepare support equipment for storage	-	455	-	-	-	-	-	68	523	523	-	-	-	-	-	-	-	-	3,000	-
1c.1.2	Install containment pressure equal. lines	-	43	-	-	-	-	-	6	50	50	-	-	-	-	-	-	-	-	700	-
1c.1.3	Interim survey prior to dormancy	-	-	-	-	-	-	733	220	953	953	-	-	-	-	-	-	-	-	18,863	-
1c.1.4	Secure building accesses									a											
1c.1.5	Prepare & submit interim report	-	-	-	-	-	-	68	10	79	79	-	-	-	-	-	-	-	-	-	583

Table E-2
Vermont Yankee Nuclear Power Station
Scenario 6: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
1c.1	Subtotal Period 1c Activity Costs	-	498	-	-	-	-	801	305	1,604	1,604	-	-	-	-	-	-	-	-	22,563	583
Period 1c Collateral Costs																					
1c.3.1	Process decommissioning water waste	196	-	66	501	-	498	-	304	1,565	1,565	-	-	-	1,238	-	-	-	74,305	241	-
1c.3.3	Small tool allowance	-	3	-	-	-	-	-	0	4	4	-	-	-	-	-	-	-	-	-	-
1c.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	2,384	358	2,742	-	2,742	-	-	-	-	-	-	-	-	-
1c.3	Subtotal Period 1c Collateral Costs	196	3	66	501	-	498	2,384	662	4,310	1,568	2,742	-	-	1,238	-	-	-	74,305	241	-
Period 1c Period-Dependent Costs																					
1c.4.1	Insurance	-	-	-	-	-	-	106	11	117	117	-	-	-	-	-	-	-	-	-	-
1c.4.2	Property taxes	-	-	-	-	-	-	2	0	2	2	-	-	-	-	-	-	-	-	-	-
1c.4.3	Health physics supplies	-	162	-	-	-	-	-	40	202	202	-	-	-	-	-	-	-	-	-	-
1c.4.4	Heavy equipment rental	-	86	-	-	-	-	-	13	99	99	-	-	-	-	-	-	-	-	-	-
1c.4.5	Disposal of DAW generated	-	-	3	2	-	12	-	4	20	20	-	-	-	155	-	-	-	3,106	5	-
1c.4.6	Plant energy budget	-	-	-	-	-	-	299	45	344	344	-	-	-	-	-	-	-	-	-	-
1c.4.7	NRC Fees	-	-	-	-	-	-	148	15	163	163	-	-	-	-	-	-	-	-	-	-
1c.4.8	Emergency Planning Fees	-	-	-	-	-	-	1,044	104	1,148	-	1,148	-	-	-	-	-	-	-	-	-
1c.4.9	Site O&M	-	-	-	-	-	-	53	8	61	61	-	-	-	-	-	-	-	-	-	-
1c.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	194	29	224	-	224	-	-	-	-	-	-	-	-	-
1c.4.11	ISFSI Operating Costs	-	-	-	-	-	-	23	3	26	-	26	-	-	-	-	-	-	-	-	-
1c.4.12	Corporate A&G	-	-	-	-	-	-	1,102	165	1,267	1,267	-	-	-	-	-	-	-	-	-	-
1c.4.13	Security Staff Cost	-	-	-	-	-	-	1,299	195	1,494	1,494	-	-	-	-	-	-	-	-	-	40,123
1c.4.14	Utility Staff Cost	-	-	-	-	-	-	6,139	921	7,060	7,060	-	-	-	-	-	-	-	-	-	107,880
1c.4	Subtotal Period 1c Period-Dependent Costs	-	248	3	2	-	12	10,409	1,553	12,226	10,828	1,398	-	-	155	-	-	-	3,106	5	148,003
1c.0	TOTAL PERIOD 1c COST	196	749	69	504	-	509	13,594	2,520	18,140	14,000	4,140	-	-	1,394	-	-	-	77,411	22,810	148,586
PERIOD 1 TOTALS		5,997	3,525	543	2,525	1,692	2,913	134,994	24,593	176,783	107,889	68,894	-	3,288	16,691	-	-	-	839,391	89,384	911,759
PERIOD 2a - SAFSTOR Dormancy with Wet Spent Fuel Storage																					
Period 2a Direct Decommissioning Activities																					
2a.1.1	Quarterly Inspection									a											
2a.1.2	Semi-annual environmental survey									a											
2a.1.3	Prepare reports									a											
2a.1.4	Bituminous roof replacement	-	-	-	-	-	-	231	35	265	265	-	-	-	-	-	-	-	-	-	-
2a.1.5	Maintenance supplies	-	-	-	-	-	-	539	135	673	673	-	-	-	-	-	-	-	-	-	-
2a.1	Subtotal Period 2a Activity Costs	-	-	-	-	-	-	769	169	938	938	-	-	-	-	-	-	-	-	-	-
Period 2a Collateral Costs																					
2a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	29,768	4,465	34,233	-	34,233	-	-	-	-	-	-	-	-	-
2a.3	Subtotal Period 2a Collateral Costs	-	-	-	-	-	-	29,768	4,465	34,233	-	34,233	-	-	-	-	-	-	-	-	-
Period 2a Period-Dependent Costs																					
2a.4.1	Insurance	-	-	-	-	-	-	1,668	167	1,835	1,676	159	-	-	-	-	-	-	-	-	-
2a.4.2	Property taxes	-	-	-	-	-	-	27	3	30	30	0	-	-	-	-	-	-	-	-	-
2a.4.3	Health physics supplies	-	555	-	-	-	-	-	139	694	694	-	-	-	-	-	-	-	-	-	-
2a.4.4	Disposal of DAW generated	-	-	16	15	-	68	-	21	120	120	-	-	-	918	-	-	-	18,368	30	-
2a.4.5	Plant energy budget	-	-	-	-	-	-	936	140	1,077	538	538	-	-	-	-	-	-	-	-	-
2a.4.6	NRC Fees	-	-	-	-	-	-	833	83	916	916	-	-	-	-	-	-	-	-	-	-
2a.4.7	Emergency Planning Fees	-	-	-	-	-	-	16,349	1,635	17,984	-	17,984	-	-	-	-	-	-	-	-	-
2a.4.8	Site O&M	-	-	-	-	-	-	830	124	954	954	-	-	-	-	-	-	-	-	-	-
2a.4.9	Spent Fuel Pool O&M	-	-	-	-	-	-	3,046	457	3,503	-	3,503	-	-	-	-	-	-	-	-	-
2a.4.10	ISFSI Operating Costs	-	-	-	-	-	-	357	54	411	-	411	-	-	-	-	-	-	-	-	-
2a.4.11	Corporate A&G	-	-	-	-	-	-	6,204	931	7,135	1,364	5,771	-	-	-	-	-	-	-	-	-
2a.4.12	Security Staff Cost	-	-	-	-	-	-	14,592	2,189	16,781	2,469	14,312	-	-	-	-	-	-	-	-	443,344
2a.4.13	Utility Staff Cost	-	-	-	-	-	-	19,610	2,941	22,551	4,658	17,893	-	-	-	-	-	-	-	-	328,866
2a.4	Subtotal Period 2a Period-Dependent Costs	-	555	16	15	-	68	64,453	8,884	73,990	13,420	60,570	-	-	918	-	-	-	18,368	30	772,210
2a.0	TOTAL PERIOD 2a COST	-	555	16	15	-	68	94,990	13,518	109,162	14,358	94,804	-	-	918	-	-	-	18,368	30	772,210

Table E-2
Vermont Yankee Nuclear Power Station
Scenario 6: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 2b - SAFSTOR Dormancy with Dry Spent Fuel Storage																					
Period 2b Direct Decommissioning Activities																					
2b.1.1	Quarterly Inspection									a											
2b.1.2	Semi-annual environmental survey									a											
2b.1.3	Prepare reports									a											
2b.1.4	Bituminous roof replacement	-	-	-	-	-	-	2,618	393	3,011	3,011	-	-	-	-	-	-	-	-	-	-
2b.1.5	Maintenance supplies	-	-	-	-	-	-	6,113	1,528	7,642	7,642	-	-	-	-	-	-	-	-	-	-
2b.1	Subtotal Period 2b Activity Costs	-	-	-	-	-	-	8,731	1,921	10,652	10,652	-	-	-	-	-	-	-	-	-	-
Period 2b Additional Costs																					
2b.2.1	Remove spent fuel racks	576	67	132	260	-	1,908	-	834	3,776	3,776	-	-	-	8,439	-	-	-	717,311	1,332	-
2b.2	Subtotal Period 2b Additional Costs	576	67	132	260	-	1,908	-	834	3,776	3,776	-	-	-	8,439	-	-	-	717,311	1,332	-
Period 2b Collateral Costs																					
2b.3.1	Small tool allowance	-	8	-	-	-	-	-	1	9	9	-	-	-	-	-	-	-	-	-	-
2b.3.2	Spent Fuel Capital and Transfer	-	-	-	-	-	-	13,498	2,025	15,523	-	15,523	-	-	-	-	-	-	-	-	-
2b.3	Subtotal Period 2b Collateral Costs	-	8	-	-	-	-	13,498	2,026	15,532	9	15,523	-	-	-	-	-	-	-	-	-
Period 2b Period-Dependent Costs																					
2b.4.1	Insurance	-	-	-	-	-	-	17,679	1,768	19,447	(0)	19,447	-	-	-	-	-	-	-	-	-
2b.4.2	Property taxes	-	-	-	-	-	-	308	31	339	339	0	-	-	-	-	-	-	-	-	-
2b.4.3	Health physics supplies	-	3,061	-	-	-	-	-	765	3,826	3,826	-	-	-	-	-	-	-	-	-	-
2b.4.4	Disposal of DAW generated	-	-	86	81	-	372	-	114	652	652	-	-	-	5,008	-	-	-	100,166	163	-
2b.4.5	Plant energy budget	-	-	-	-	-	-	5,315	797	6,113	6,113	-	-	-	-	-	-	-	-	-	-
2b.4.6	NRC Fees	-	-	-	-	-	-	8,895	890	9,785	9,785	-	-	-	-	-	-	-	-	-	-
2b.4.7	Emergency Planning Fees	-	-	-	-	-	-	16,393	1,639	18,032	-	18,032	-	-	-	-	-	-	-	-	-
2b.4.8	Site O&M	-	-	-	-	-	-	9,419	1,413	10,832	(0)	10,832	-	-	-	-	-	-	-	-	-
2b.4.9	ISFSI Operating Costs	-	-	-	-	-	-	4,053	608	4,661	-	4,661	-	-	-	-	-	-	-	-	-
2b.4.10	Corporate A&G	-	-	-	-	-	-	11,698	1,755	13,452	0	13,452	-	-	-	-	-	-	-	-	-
2b.4.11	Security Staff Cost	-	-	-	-	-	-	88,562	13,284	101,847	(0)	101,847	-	-	-	-	-	-	-	-	2,551,886
2b.4.12	Utility Staff Cost	-	-	-	-	-	-	88,009	13,201	101,211	54,723	46,488	-	-	-	-	-	-	-	-	1,512,229
2b.4	Subtotal Period 2b Period-Dependent Costs	-	3,061	86	81	-	372	250,332	36,265	290,196	75,437	214,760	-	-	5,008	-	-	-	100,166	163	4,064,114
2b.0	TOTAL PERIOD 2b COST	576	3,136	218	341	-	2,280	272,561	41,046	320,157	89,874	230,282	-	-	13,447	-	-	-	817,477	1,495	4,064,114
PERIOD 2c - SAFSTOR Dormancy without Spent Fuel Storage																					
Period 2c Direct Decommissioning Activities																					
2c.1.1	Quarterly Inspection									a											
2c.1.2	Semi-annual environmental survey									a											
2c.1.3	Prepare reports									a											
2c.1.4	Bituminous roof replacement	-	-	-	-	-	-	187	28	216	216	-	-	-	-	-	-	-	-	-	-
2c.1.5	Maintenance supplies	-	-	-	-	-	-	438	109	547	547	-	-	-	-	-	-	-	-	-	-
2c.1	Subtotal Period 2c Activity Costs	-	-	-	-	-	-	625	138	763	763	-	-	-	-	-	-	-	-	-	-
Period 2c Period-Dependent Costs																					
2c.4.1	Insurance	-	-	-	-	-	-	1,238	124	1,362	1,362	-	-	-	-	-	-	-	-	-	-
2c.4.2	Property taxes	-	-	-	-	-	-	22	2	24	24	-	-	-	-	-	-	-	-	-	-
2c.4.3	Health physics supplies	-	206	-	-	-	-	-	51	257	257	-	-	-	-	-	-	-	-	-	-
2c.4.4	Disposal of DAW generated	-	-	6	5	-	24	-	7	43	43	-	-	-	330	-	-	-	6,604	11	-
2c.4.5	Plant energy budget	-	-	-	-	-	-	380	57	438	438	-	-	-	-	-	-	-	-	-	-
2c.4.6	NRC Fees	-	-	-	-	-	-	570	57	627	627	-	-	-	-	-	-	-	-	-	-
2c.4.7	Site O&M	-	-	-	-	-	-	674	101	775	775	-	-	-	-	-	-	-	-	-	-
2c.4.8	Corporate A&G	-	-	-	-	-	-	964	145	1,108	1,108	-	-	-	-	-	-	-	-	-	-
2c.4.9	Security Staff Cost	-	-	-	-	-	-	1,745	262	2,006	2,006	-	-	-	-	-	-	-	-	-	101,486
2c.4.10	Utility Staff Cost	-	-	-	-	-	-	3,292	494	3,785	3,785	-	-	-	-	-	-	-	-	-	59,200
2c.4	Subtotal Period 2c Period-Dependent Costs	-	206	6	5	-	24	8,885	1,300	10,426	10,426	-	-	-	330	-	-	-	6,604	11	160,686
2c.0	TOTAL PERIOD 2c COST	-	206	6	5	-	24	9,510	1,438	11,189	11,189	-	-	-	330	-	-	-	6,604	11	160,686
PERIOD 2 TOTALS		576	3,897	240	361	-	2,372	377,061	56,001	440,507	115,422	325,086	-	-	14,696	-	-	-	842,449	1,536	4,997,010

Table E-2
Vermont Yankee Nuclear Power Station
Scenario 6: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 3a - Reactivate Site Following SAFSTOR Dormancy																					
Period 3a Direct Decommissioning Activities																					
3a.1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
3a.1.2	Review plant dwgs & specs.	-	-	-	-	-	-	538	81	619	619	-	-	-	-	-	-	-	-	-	4,600
3a.1.3	Perform detailed rad survey									a											
3a.1.4	End product description	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
3a.1.5	Detailed by-product inventory	-	-	-	-	-	-	152	23	175	175	-	-	-	-	-	-	-	-	-	1,300
3a.1.6	Define major work sequence	-	-	-	-	-	-	878	132	1,010	1,010	-	-	-	-	-	-	-	-	-	7,500
3a.1.7	Perform SER and EA	-	-	-	-	-	-	363	54	417	417	-	-	-	-	-	-	-	-	-	3,100
3a.1.8	Perform Site-Specific Cost Study	-	-	-	-	-	-	585	88	673	673	-	-	-	-	-	-	-	-	-	5,000
3a.1.9	Prepare/submit License Termination Plan	-	-	-	-	-	-	479	72	551	551	-	-	-	-	-	-	-	-	-	4,096
3a.1.10	Receive NRC approval of termination plan									a											
Activity Specifications																					
3a.1.11.1	Re-activate plant & temporary facilities	-	-	-	-	-	-	863	129	992	893	-	99	-	-	-	-	-	-	-	7,370
3a.1.11.2	Plant systems	-	-	-	-	-	-	488	73	561	505	-	56	-	-	-	-	-	-	-	4,167
3a.1.11.3	Reactor internals	-	-	-	-	-	-	831	125	956	956	-	-	-	-	-	-	-	-	-	7,100
3a.1.11.4	Reactor vessel	-	-	-	-	-	-	761	114	875	875	-	-	-	-	-	-	-	-	-	6,500
3a.1.11.5	Sacrificial shield	-	-	-	-	-	-	59	9	67	67	-	-	-	-	-	-	-	-	-	500
3a.1.11.6	Moisture separators/reheaters	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
3a.1.11.7	Reinforced concrete	-	-	-	-	-	-	187	28	215	108	-	108	-	-	-	-	-	-	-	1,600
3a.1.11.8	Main Turbine	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
3a.1.11.9	Main Condensers	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
3a.1.11.10	Pressure suppression structure	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
3a.1.11.11	Drywell	-	-	-	-	-	-	187	28	215	215	-	-	-	-	-	-	-	-	-	1,600
3a.1.11.12	Plant structures & buildings	-	-	-	-	-	-	365	55	420	210	-	210	-	-	-	-	-	-	-	3,120
3a.1.11.13	Waste management	-	-	-	-	-	-	538	81	619	619	-	-	-	-	-	-	-	-	-	4,600
3a.1.11.14	Facility & site closeout	-	-	-	-	-	-	105	16	121	61	-	61	-	-	-	-	-	-	-	900
3a.1.11	Total	-	-	-	-	-	-	5,224	784	6,008	5,474	-	534	-	-	-	-	-	-	-	44,633
Planning & Site Preparations																					
3a.1.12	Prepare dismantling sequence	-	-	-	-	-	-	281	42	323	323	-	-	-	-	-	-	-	-	-	2,400
3a.1.13	Plant prep. & temp. svces	-	-	-	-	-	-	2,800	420	3,220	3,220	-	-	-	-	-	-	-	-	-	-
3a.1.14	Design water clean-up system	-	-	-	-	-	-	164	25	188	188	-	-	-	-	-	-	-	-	-	1,400
3a.1.15	Rigging/Cont. Cntrl Envlps/tooling/etc.	-	-	-	-	-	-	2,200	330	2,530	2,530	-	-	-	-	-	-	-	-	-	-
3a.1.16	Procure casks/liners & containers	-	-	-	-	-	-	144	22	166	166	-	-	-	-	-	-	-	-	-	1,230
3a.1	Subtotal Period 3a Activity Costs	-	-	-	-	-	-	14,078	2,112	16,190	15,656	-	534	-	-	-	-	-	-	-	77,559
Period 3a Period-Dependent Costs																					
3a.4.1	Insurance	-	-	-	-	-	-	382	38	420	420	-	-	-	-	-	-	-	-	-	-
3a.4.2	Property taxes	-	-	-	-	-	-	7	1	7	7	-	-	-	-	-	-	-	-	-	-
3a.4.3	Health physics supplies	-	303	-	-	-	-	-	76	379	379	-	-	-	-	-	-	-	-	-	-
3a.4.4	Heavy equipment rental	-	338	-	-	-	-	-	51	389	389	-	-	-	-	-	-	-	-	-	-
3a.4.5	Disposal of DAW generated	-	-	9	8	-	38	-	12	67	67	-	-	-	514	-	-	-	10,287	17	-
3a.4.6	Plant energy budget	-	-	-	-	-	-	1,173	176	1,349	1,349	-	-	-	-	-	-	-	-	-	-
3a.4.7	NRC Fees	-	-	-	-	-	-	262	26	289	289	-	-	-	-	-	-	-	-	-	-
3a.4.8	Site O&M	-	-	-	-	-	-	208	31	239	239	-	-	-	-	-	-	-	-	-	-
3a.4.9	Corporate A&G	-	-	-	-	-	-	1,887	283	2,170	2,170	-	-	-	-	-	-	-	-	-	-
3a.4.10	Security Staff Cost	-	-	-	-	-	-	1,121	168	1,289	1,289	-	-	-	-	-	-	-	-	-	65,179
3a.4.11	Utility Staff Cost	-	-	-	-	-	-	14,940	2,241	17,181	17,181	-	-	-	-	-	-	-	-	-	258,629
3a.4	Subtotal Period 3a Period-Dependent Costs	-	641	9	8	-	38	19,979	3,103	23,778	23,778	-	-	-	514	-	-	-	10,287	17	323,807
3a.0	TOTAL PERIOD 3a COST	-	641	9	8	-	38	34,057	5,214	39,968	39,435	-	534	-	514	-	-	-	10,287	17	401,366

Table E-2
Vermont Yankee Nuclear Power Station
Scenario 6: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 3b - Decommissioning Preparations																					
Period 3b Direct Decommissioning Activities																					
Detailed Work Procedures																					
3b.1.1.1	Plant systems	-	-	-	-	-	-	554	83	637	573	-	64	-	-	-	-	-	-	-	4,733
3b.1.1.2	Reactor internals	-	-	-	-	-	-	468	70	538	538	-	-	-	-	-	-	-	-	-	4,000
3b.1.1.3	Remaining buildings	-	-	-	-	-	-	158	24	182	45	-	136	-	-	-	-	-	-	-	1,350
3b.1.1.4	CRD housings & NIs	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
3b.1.1.5	Incore instrumentation	-	-	-	-	-	-	117	18	135	135	-	-	-	-	-	-	-	-	-	1,000
3b.1.1.6	Removal primary containment	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
3b.1.1.7	Reactor vessel	-	-	-	-	-	-	425	64	489	489	-	-	-	-	-	-	-	-	-	3,630
3b.1.1.8	Facility closeout	-	-	-	-	-	-	140	21	162	81	-	81	-	-	-	-	-	-	-	1,200
3b.1.1.9	Sacrificial shield	-	-	-	-	-	-	140	21	162	162	-	-	-	-	-	-	-	-	-	1,200
3b.1.1.10	Reinforced concrete	-	-	-	-	-	-	117	18	135	67	-	67	-	-	-	-	-	-	-	1,000
3b.1.1.11	Main Turbine	-	-	-	-	-	-	243	37	280	280	-	-	-	-	-	-	-	-	-	2,080
3b.1.1.12	Main Condensers	-	-	-	-	-	-	244	37	281	281	-	-	-	-	-	-	-	-	-	2,088
3b.1.1.13	Moisture separators & reheaters	-	-	-	-	-	-	234	35	269	269	-	-	-	-	-	-	-	-	-	2,000
3b.1.1.14	Radwaste building	-	-	-	-	-	-	320	48	367	331	-	37	-	-	-	-	-	-	-	2,730
3b.1.1.15	Reactor building	-	-	-	-	-	-	320	48	367	331	-	37	-	-	-	-	-	-	-	2,730
3b.1.1	Total	-	-	-	-	-	-	3,832	575	4,407	3,986	-	422	-	-	-	-	-	-	-	32,741
3b.1	Subtotal Period 3b Activity Costs	-	-	-	-	-	-	3,832	575	4,407	3,986	-	422	-	-	-	-	-	-	-	32,741
Period 3b Additional Costs																					
3b.2.1	Site Characterization	-	-	-	-	-	-	3,706	1,112	4,818	4,818	-	-	-	-	-	-	-	-	-	-
3b.2	Subtotal Period 3b Additional Costs	-	-	-	-	-	-	3,706	1,112	4,818	4,818	-	-	-	-	-	-	-	-	-	-
Period 3b Collateral Costs																					
3b.3.1	Decon equipment	667	-	-	-	-	-	-	100	767	767	-	-	-	-	-	-	-	-	-	-
3b.3.2	DOC staff relocation expenses	-	-	-	-	-	-	1,030	154	1,184	1,184	-	-	-	-	-	-	-	-	-	-
3b.3.3	Pipe cutting equipment	-	1,100	-	-	-	-	-	165	1,265	1,265	-	-	-	-	-	-	-	-	-	-
3b.3	Subtotal Period 3b Collateral Costs	667	1,100	-	-	-	-	1,030	419	3,216	3,216	-	-	-	-	-	-	-	-	-	-
Period 3b Period-Dependent Costs																					
3b.4.1	Decon supplies	21	-	-	-	-	-	-	5	26	26	-	-	-	-	-	-	-	-	-	-
3b.4.2	Insurance	-	-	-	-	-	-	212	21	233	233	-	-	-	-	-	-	-	-	-	-
3b.4.3	Property taxes	-	-	-	-	-	-	3	0	4	4	-	-	-	-	-	-	-	-	-	-
3b.4.4	Health physics supplies	-	169	-	-	-	-	-	42	212	212	-	-	-	-	-	-	-	-	-	-
3b.4.5	Heavy equipment rental	-	172	-	-	-	-	-	26	197	197	-	-	-	-	-	-	-	-	-	-
3b.4.6	Disposal of DAW generated	-	-	5	5	-	22	-	7	38	38	-	-	-	295	-	-	-	5,898	10	-
3b.4.7	Plant energy budget	-	-	-	-	-	-	595	89	684	684	-	-	-	-	-	-	-	-	-	-
3b.4.8	NRC Fees	-	-	-	-	-	-	133	13	146	146	-	-	-	-	-	-	-	-	-	-
3b.4.9	Site O&M	-	-	-	-	-	-	105	16	121	121	-	-	-	-	-	-	-	-	-	-
3b.4.10	Corporate A&G	-	-	-	-	-	-	1,045	157	1,202	1,202	-	-	-	-	-	-	-	-	-	-
3b.4.11	Security Staff Cost	-	-	-	-	-	-	568	85	653	653	-	-	-	-	-	-	-	-	-	33,036
3b.4.12	DOC Staff Cost	-	-	-	-	-	-	5,092	764	5,856	5,856	-	-	-	-	-	-	-	-	-	59,200
3b.4.13	Utility Staff Cost	-	-	-	-	-	-	7,572	1,136	8,708	8,708	-	-	-	-	-	-	-	-	-	131,086
3b.4	Subtotal Period 3b Period-Dependent Costs	21	341	5	5	-	22	15,326	2,361	18,080	18,080	-	-	-	295	-	-	-	5,898	10	223,321
3b.0	TOTAL PERIOD 3b COST	687	1,441	5	5	-	22	23,894	4,468	30,522	30,100	-	422	-	295	-	-	-	5,898	10	256,062
PERIOD 3 TOTALS		687	2,082	14	13	-	60	57,951	9,682	70,490	69,535	-	955	-	809	-	-	-	16,185	26	657,428
PERIOD 4a - Large Component Removal																					
Period 4a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
4a.1.1.1	Recirculation System Piping & Valves	22	71	20	28	89	185	-	94	509	509	-	-	575	608	-	-	-	133,340	1,761	-
4a.1.1.2	Recirculation Pumps & Motors	8	37	13	38	85	134	-	67	382	382	-	-	1,075	894	-	-	-	111,100	946	-
4a.1.1.3	CRDMs & NIs Removal	19	80	234	85	-	178	-	110	706	706	-	-	-	2,561	-	-	-	67,063	1,879	-
4a.1.1.4	Reactor Vessel Internals	81	2,632	6,802	1,287	-	5,211	253	6,680	22,946	22,946	-	-	-	1,002	751	856	-	258,030	28,033	1,253

Table E-2
Vermont Yankee Nuclear Power Station
Scenario 6: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Nuclear Steam Supply System Removal (continued)																					
4a.1.1.5	Vessel & Internals GTCC Disposal	-	-	-	-	-	4,926	-	739	5,665	5,665	-	-	-	-	-	-	1,785	347,940	-	-
4a.1.1.6	Reactor Vessel	-	6,294	1,513	674	-	2,889	253	6,749	18,372	18,372	-	-	-	12,772	-	-	-	1,292,271	28,033	1,253
4a.1.1	Totals	130	9,114	8,582	2,112	174	13,523	505	14,440	48,579	48,579	-	-	1,650	17,836	751	856	1,785	2,209,743	60,652	2,507
Removal of Major Equipment																					
4a.1.2	Main Turbine/Generator	-	217	1,149	546	4,201	-	-	881	6,993	6,993	-	-	66,677	-	-	-	-	3,000,454	3,897	-
4a.1.3	Main Condensers	-	475	645	306	2,358	-	-	583	4,366	4,366	-	-	37,422	-	-	-	-	1,684,000	8,400	-
Cascading Costs from Clean Building Demolition																					
4a.1.4.1	Reactor	-	701	-	-	-	-	-	105	806	806	-	-	-	-	-	-	-	-	8,238	-
4a.1.4.2	AOG	-	85	-	-	-	-	-	13	98	98	-	-	-	-	-	-	-	-	1,032	-
4a.1.4.3	Equipment Lock	-	4	-	-	-	-	-	1	5	5	-	-	-	-	-	-	-	-	55	-
4a.1.4.4	Misc Cont Yard Structures	-	8	-	-	-	-	-	1	9	9	-	-	-	-	-	-	-	-	105	-
4a.1.4.5	North Warehouse	-	1	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	16	-
4a.1.4.6	Radwaste	-	26	-	-	-	-	-	4	30	30	-	-	-	-	-	-	-	-	318	-
4a.1.4.7	Radwaste Compactor	-	0	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	4	-
4a.1.4.8	Turbine	-	237	-	-	-	-	-	36	273	273	-	-	-	-	-	-	-	-	2,999	-
4a.1.4.9	Vent Stack	-	0	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	5	-
4a.1.4	Totals	-	1,062	-	-	-	-	-	159	1,222	1,222	-	-	-	-	-	-	-	-	12,771	-
Reactor Building System Components																					
4a.1.5.1	RX-BLD-213-2_2	-	134	6	18	85	54	-	63	360	360	-	-	1,492	237	-	-	-	80,793	2,496	-
4a.1.5.2	RX-BLD-213-3_2	-	118	4	12	59	29	-	48	270	270	-	-	1,043	130	-	-	-	53,400	2,210	-
4a.1.5.3	RX-BLD-213-4_2	-	123	3	8	37	23	-	44	238	238	-	-	658	102	-	-	-	35,392	2,305	-
4a.1.5.4	RX-BLD-213-5_2	-	219	16	46	201	144	-	129	755	755	-	-	3,531	637	-	-	-	197,501	4,086	-
4a.1.5.5	RX-BLD-232-2_2	-	111	8	22	93	69	-	63	366	366	-	-	1,640	307	-	-	-	92,729	2,073	-
4a.1.5.6	RX-BLD-232-3_2	-	100	7	20	88	65	-	58	339	339	-	-	1,556	287	-	-	-	87,560	1,875	-
4a.1.5.7	RX-BLD-232-4_2	-	49	1	3	13	8	-	17	91	91	-	-	225	37	-	-	-	12,298	888	-
4a.1.5.8	RX-BLD-232-5_2	-	55	2	5	26	15	-	22	125	125	-	-	449	68	-	-	-	24,053	990	-
4a.1.5.9	RX-BLD-252-10_2	-	9	0	0	2	-	-	3	14	14	-	-	38	-	-	-	-	1,538	170	-
4a.1.5.10	RX-BLD-252-1_2	-	7	0	0	2	-	-	2	10	10	-	-	27	-	-	-	-	1,086	119	-
4a.1.5.11	RX-BLD-252-1_3	-	3	0	0	-	1	-	1	5	5	-	-	-	5	-	-	-	427	52	-
4a.1.5.12	RX-BLD-252-2_2	-	35	2	7	29	23	-	20	116	116	-	-	502	100	-	-	-	28,864	651	-
4a.1.5.13	RX-BLD-252-3_2	-	44	1	3	16	4	-	15	82	82	-	-	276	16	-	-	-	12,590	823	-
4a.1.5.14	RX-BLD-252-3_3	-	2	0	0	-	2	-	1	6	6	-	-	-	10	-	-	-	863	40	-
4a.1.5.15	RX-BLD-252-4_2	-	92	2	13	102	-	-	41	251	251	-	-	1,796	-	-	-	-	72,928	1,733	-
4a.1.5.16	RX-BLD-252-4_3	-	1	0	0	-	1	-	0	2	2	-	-	-	3	-	-	-	234	14	-
4a.1.5.17	RX-BLD-252-5_2	-	229	3	20	156	-	-	84	492	492	-	-	2,738	-	-	-	-	111,209	4,207	-
4a.1.5.18	RX-BLD-252-5_3	-	103	11	13	-	97	-	53	277	277	-	-	-	427	-	-	-	36,281	1,647	-
4a.1.5.19	RX-BLD-252-6_2	-	191	3	15	116	-	-	68	392	392	-	-	2,045	-	-	-	-	83,064	3,496	-
4a.1.5.20	RX-BLD-252-6_3	-	106	12	14	-	104	-	56	292	292	-	-	-	459	-	-	-	39,016	1,712	-
4a.1.5.21	RX-BLD-252-7_2	-	172	1	8	62	-	-	54	297	297	-	-	1,094	-	-	-	-	44,442	3,163	-
4a.1.5.22	RX-BLD-252-8_2	-	52	1	3	26	-	-	18	100	100	-	-	463	-	-	-	-	18,797	954	-
4a.1.5.23	RX-BLD-252-9_2	-	86	1	5	29	7	-	28	156	156	-	-	511	29	-	-	-	23,198	1,579	-
4a.1.5.24	RX-BLD-252-9_3	-	19	2	4	-	27	-	12	65	65	-	-	-	121	-	-	-	10,281	339	-
4a.1.5	Totals	-	2,060	87	240	1,142	673	-	899	5,101	5,101	-	-	20,083	2,977	-	-	-	1,068,545	37,623	-
Turbine Building System Components																					
4a.1.6.1	TURB-BLD-222-10_2	-	97	1	5	42	-	-	31	176	176	-	-	735	-	-	-	-	29,859	1,836	-
4a.1.6.2	TURB-BLD-222-11_2	-	60	1	3	24	-	-	19	106	106	-	-	422	-	-	-	-	17,121	1,115	-
4a.1.6.3	TURB-BLD-222-1_2	-	388	9	53	412	-	-	168	1,030	1,030	-	-	7,245	-	-	-	-	294,230	7,209	-
4a.1.6.4	TURB-BLD-222-2_2	-	302	10	62	475	-	-	157	1,006	1,006	-	-	8,362	-	-	-	-	339,601	5,576	-
4a.1.6.5	TURB-BLD-222-3_2	-	86	3	16	119	-	-	42	265	265	-	-	2,101	-	-	-	-	85,320	1,579	-
4a.1.6.6	TURB-BLD-222-8_2	-	248	2	14	107	-	-	81	452	452	-	-	1,885	-	-	-	-	76,566	4,680	-
4a.1.6.7	TURB-BLD-222-9_2	-	141	11	66	510	-	-	123	851	851	-	-	8,970	-	-	-	-	364,295	2,629	-
4a.1.6.8	TURB-BLD-228-12_2	-	200	2	10	77	-	-	63	352	352	-	-	1,355	-	-	-	-	55,030	3,702	-
4a.1.6.9	TURB-BLD-228-13_2	-	130	1	5	38	-	-	39	212	212	-	-	666	-	-	-	-	27,061	2,432	-
4a.1.6.10	TURB-BLD-228-1_2	-	124	2	12	90	-	-	46	274	274	-	-	1,584	-	-	-	-	64,321	2,279	-
4a.1.6.11	TURB-BLD-228-2_2	-	365	14	84	650	-	-	203	1,317	1,317	-	-	11,437	-	-	-	-	464,451	6,827	-
4a.1.6.12	TURB-BLD-228-3_2	-	310	7	41	312	-	-	131	800	800	-	-	5,486	-	-	-	-	222,807	5,785	-
4a.1.6.13	TURB-BLD-228-4_2	-	345	8	47	362	-	-	148	910	910	-	-	6,374	-	-	-	-	258,860	6,410	-

Table E-2
Vermont Yankee Nuclear Power Station
Scenario 6: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Turbine Building System Components (continued)																					
4a.1.6.14	TURB-BLD-228-5_2	-	163	4	27	207	-	-	76	478	478	-	-	3,648	-	-	-	-	148,129	3,001	-
4a.1.6.15	TURB-BLD-228-6_2	-	135	4	23	175	-	-	64	400	400	-	-	3,075	-	-	-	-	124,888	2,491	-
4a.1.6	Totals	-	3,093	78	468	3,602	-	-	1,391	8,632	8,632	-	-	63,347	-	-	-	-	2,572,537	57,553	-
Augmented Offgas Building System Components																					
4a.1.7.1	AOG-BLD-FL1-1_2	-	31	0	2	17	-	-	11	61	61	-	-	293	-	-	-	-	11,904	569	-
4a.1.7.2	AOG-BLD-FL1-2_2	-	95	2	13	98	-	-	40	248	248	-	-	1,724	-	-	-	-	70,026	1,741	-
4a.1.7.3	AOG-BLD-FL1-3_2	-	94	2	12	89	-	-	39	236	236	-	-	1,572	-	-	-	-	63,838	1,690	-
4a.1.7.4	AOG-BLD-FL1-4_2	-	99	2	9	72	-	-	37	219	219	-	-	1,260	-	-	-	-	51,189	1,771	-
4a.1.7.5	AOG-BLD-FL1-5_2	-	98	1	6	48	-	-	33	186	186	-	-	849	-	-	-	-	34,481	1,796	-
4a.1.7.6	AOG-BLD-FL2-1_2	-	61	1	7	56	-	-	25	150	150	-	-	990	-	-	-	-	40,198	1,108	-
4a.1.7.7	AOG-BLD-FL2-2_2	-	7	0	0	3	-	-	2	13	13	-	-	55	-	-	-	-	2,232	133	-
4a.1.7.8	AOG-BLD-FL2-3_2	-	7	0	0	3	-	-	2	12	12	-	-	52	-	-	-	-	2,128	121	-
4a.1.7.9	AOG-BLD-FL2-4_2	-	52	1	7	55	-	-	22	138	138	-	-	965	-	-	-	-	39,196	947	-
4a.1.7.10	AOG-BLD-FL2-5_2	-	7	0	0	2	-	-	2	11	11	-	-	30	-	-	-	-	1,212	125	-
4a.1.7.11	AOG-BLD-FL2-6_2	-	6	0	0	3	-	-	2	12	12	-	-	52	-	-	-	-	2,128	114	-
4a.1.7.12	AOG-BLD-FL2-7_2	-	30	0	1	10	-	-	9	51	51	-	-	176	-	-	-	-	7,154	539	-
4a.1.7.13	AOG-BLD-FL2-8_2	-	15	0	1	6	-	-	5	26	26	-	-	101	-	-	-	-	4,118	263	-
4a.1.7.14	AOG-BLD-FL2-9_2	-	95	2	13	98	-	-	41	248	248	-	-	1,715	-	-	-	-	69,653	1,717	-
4a.1.7.15	AOG-BLDG-1_2	-	48	2	5	14	20	-	20	108	108	-	-	250	86	-	-	-	17,504	862	-
4a.1.7.16	AOG-BLDG-2_2	-	168	1	3	7	14	-	47	240	240	-	-	128	66	-	-	-	10,462	2,484	-
4a.1.7.17	AOG-BLDG-PENT_2	-	34	0	3	21	-	-	12	71	71	-	-	377	-	-	-	-	15,291	605	-
4a.1.7.18	AOG-BLDG-RF_2	-	73	2	10	78	-	-	32	195	195	-	-	1,375	-	-	-	-	55,841	1,292	-
4a.1.7	Totals	-	1,018	17	93	680	34	-	381	2,223	2,223	-	-	11,965	152	-	-	-	498,555	17,875	-
4a.1.8	Scaffolding in support of decommissioning	-	593	25	12	92	-	-	166	888	888	-	-	1,458	-	-	-	-	65,595	11,723	-
4a.1	Subtotal Period 4a Activity Costs	130	17,633	10,583	3,776	12,248	14,229	505	18,901	78,004	78,004	-	-	202,602	20,965	751	856	1,785	11,099,430	210,494	2,507
Period 4a Additional Costs																					
4a.2.1	Retired Low Presure Turbine Rotors	-	-	31	19	1,868	-	-	286	2,204	2,204	-	-	2,723	-	-	-	-	1,334,256	640	-
4a.2	Subtotal Period 4a Additional Costs	-	-	31	19	1,868	-	-	286	2,204	2,204	-	-	2,723	-	-	-	-	1,334,256	640	-
Period 4a Collateral Costs																					
4a.3.1	Process decommissioning water waste	5	-	4	33	-	33	-	16	93	93	-	-	-	83	-	-	-	4,966	16	-
4a.3.3	Small tool allowance	-	154	-	-	-	-	-	23	177	159	-	18	-	-	-	-	-	-	-	-
4a.3	Subtotal Period 4a Collateral Costs	5	154	4	33	-	33	-	39	269	252	-	18	-	83	-	-	-	4,966	16	-
Period 4a Period-Dependent Costs																					
4a.4.1	Decon supplies	52	-	-	-	-	-	-	13	65	65	-	-	-	-	-	-	-	-	-	-
4a.4.2	Insurance	-	-	-	-	-	-	534	53	587	587	-	-	-	-	-	-	-	-	-	-
4a.4.3	Property taxes	-	-	-	-	-	-	9	1	10	9	-	1	-	-	-	-	-	-	-	-
4a.4.4	Health physics supplies	-	1,114	-	-	-	-	-	279	1,393	1,393	-	-	-	-	-	-	-	-	-	-
4a.4.5	Heavy equipment rental	-	1,880	-	-	-	-	-	282	2,163	2,163	-	-	-	-	-	-	-	-	-	-
4a.4.6	Disposal of DAW generated	-	-	65	61	-	279	-	85	490	490	-	-	-	3,764	-	-	-	75,278	123	-
4a.4.7	Plant energy budget	-	-	-	-	-	-	1,423	213	1,636	1,636	-	-	-	-	-	-	-	-	-	-
4a.4.8	NRC Fees	-	-	-	-	-	-	639	64	703	703	-	-	-	-	-	-	-	-	-	-
4a.4.9	Site O&M	-	-	-	-	-	-	265	40	305	305	-	-	-	-	-	-	-	-	-	-
4a.4.10	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	495	74	569	569	-	-	-	-	-	-	-	-	-	-
4a.4.11	Corporate A&G	-	-	-	-	-	-	2,626	394	3,020	3,020	-	-	-	-	-	-	-	-	-	-
4a.4.12	Security Staff Cost	-	-	-	-	-	-	1,431	215	1,645	1,645	-	-	-	-	-	-	-	-	-	83,214
4a.4.13	DOC Staff Cost	-	-	-	-	-	-	15,540	2,331	17,871	17,871	-	-	-	-	-	-	-	-	-	183,737
4a.4.14	Utility Staff Cost	-	-	-	-	-	-	19,204	2,881	22,085	22,085	-	-	-	-	-	-	-	-	-	332,857
4a.4	Subtotal Period 4a Period-Dependent Costs	52	2,995	65	61	-	279	42,165	6,925	52,541	52,540	-	1	-	3,764	-	-	-	75,278	123	599,809
4a.0	TOTAL PERIOD 4a COST	187	20,782	10,683	3,889	14,116	14,542	42,670	26,151	133,019	133,000	-	19	205,325	24,812	751	856	1,785	12,513,930	211,273	602,315

Table E-2
Vermont Yankee Nuclear Power Station
Scenario 6: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 4b - Site Decontamination																					
Reactor Building System Components																					
4b.1.2.1	RX-BLD-213-1_2	-	1,048	30	157	1,150	58	-	475	2,918	2,918	-	-	20,227	255	-	-	-	843,080	21,042	-
4b.1.2.2	RX-BLD-213-1_3	-	50	7	12	-	90	-	38	197	197	-	-	-	397	-	-	-	33,774	932	-
4b.1.2.3	RX-BLD-232-1_2	-	464	34	98	405	331	-	277	1,609	1,609	-	-	7,129	1,463	-	-	-	413,865	8,461	-
4b.1.2.4	RX-BLD-232-1_3	-	22	2	3	-	23	-	12	63	63	-	-	-	103	-	-	-	8,738	374	-
4b.1.2.5	RX-BLD-280-1_2	-	22	0	1	8	-	-	7	38	38	-	-	143	-	-	-	-	5,794	415	-
4b.1.2.6	RX-BLD-280-1_3	-	48	4	7	-	53	-	27	139	139	-	-	-	234	-	-	-	19,900	903	-
4b.1.2.7	RX-BLD-280-2_2	-	27	1	2	8	8	-	10	57	57	-	-	147	37	-	-	-	9,122	491	-
4b.1.2.8	RX-BLD-280-2_3	-	72	13	24	-	177	-	67	354	354	-	-	-	785	-	-	-	66,718	1,359	-
4b.1.2.9	RX-BLD-280-3_2	-	191	5	31	235	-	-	88	550	550	-	-	4,139	-	-	-	-	168,090	3,467	-
4b.1.2.10	RX-BLD-280-4_2	-	79	1	5	39	-	-	26	150	150	-	-	692	-	-	-	-	28,115	1,430	-
4b.1.2.11	RX-BLD-280-5_2	-	161	2	10	74	-	-	53	299	299	-	-	1,303	-	-	-	-	52,897	2,944	-
4b.1.2.12	RX-BLD-280-6_2	-	175	2	10	76	-	-	57	319	319	-	-	1,336	-	-	-	-	54,249	3,219	-
4b.1.2.13	RX-BLD-280-7_2	-	142	3	19	144	-	-	60	369	369	-	-	2,538	-	-	-	-	103,081	2,587	-
4b.1.2.14	RX-BLD-280-ROOF_2	-	26	2	11	86	-	-	21	147	147	-	-	1,519	-	-	-	-	61,692	476	-
4b.1.2.15	RX-BLD-303-1_2	-	39	1	3	16	9	-	15	83	83	-	-	279	38	-	-	-	14,546	749	-
4b.1.2.16	RX-BLD-303-1_3	-	134	25	40	-	295	-	116	610	610	-	-	-	1,307	-	-	-	111,075	2,513	-
4b.1.2.17	RX-BLD-303-2_3	-	57	7	10	-	72	-	34	179	179	-	-	-	381	-	-	-	26,893	1,063	-
4b.1.2.18	RX-BLD-303-3_3	-	20	1	1	-	10	-	8	41	41	-	-	-	45	-	-	-	3,831	381	-
4b.1.2.19	RX-BLD-303-4_2	-	191	4	24	185	-	-	80	484	484	-	-	3,258	-	-	-	-	132,305	3,439	-
4b.1.2.20	RX-BLD-303-5_2	-	20	0	1	7	-	-	6	34	34	-	-	116	-	-	-	-	4,694	376	-
4b.1.2.21	RX-BLD-303-6_2	-	11	0	0	3	-	-	3	18	18	-	-	56	-	-	-	-	2,262	210	-
4b.1.2.22	RX-BLD-303-7_2	-	82	1	9	67	-	-	32	191	191	-	-	1,178	-	-	-	-	47,837	1,510	-
4b.1.2.23	RX-BLD-303-7_3	-	21	3	5	-	35	-	15	79	79	-	-	-	157	-	-	-	13,334	364	-
4b.1.2.24	RX-BLD-303-8_2	-	73	1	5	40	-	-	25	143	143	-	-	697	-	-	-	-	28,313	1,300	-
4b.1.2.25	RX-BLD-318-1_3	-	17	1	2	-	12	-	8	39	39	-	-	-	60	-	-	-	4,371	327	-
4b.1.2.26	RX-BLD-318-2_3	-	33	3	3	-	24	-	15	78	78	-	-	-	106	-	-	-	9,021	585	-
4b.1.2.27	RX-BLD-318-3_3	-	25	2	3	-	21	-	12	62	62	-	-	-	92	-	-	-	7,792	444	-
4b.1.2.28	RX-BLD-318-4_2	-	512	7	45	343	-	-	187	1,093	1,093	-	-	6,034	-	-	-	-	245,044	9,436	-
4b.1.2.29	RX-BLD-318-4_3	-	13	1	2	-	15	-	7	39	39	-	-	-	66	-	-	-	5,636	221	-
4b.1.2.30	RX-BLD-318-5_2	-	90	2	9	72	-	-	35	207	207	-	-	1,260	-	-	-	-	51,163	1,625	-
4b.1.2.31	RX-BLD-318-6_2	-	49	0	3	23	-	-	16	91	91	-	-	408	-	-	-	-	16,581	833	-
4b.1.2.32	RX-BLD-318-7_2	-	40	1	4	29	-	-	15	88	88	-	-	503	-	-	-	-	20,423	722	-
4b.1.2.33	RX-BLD-345-1_3	-	267	1	1	-	7	-	69	345	345	-	-	-	31	-	-	-	2,619	5,186	-
4b.1.2.34	RX-BLD-345-2_3	-	188	0	0	-	2	-	47	237	237	-	-	-	7	-	-	-	631	3,647	-
4b.1.2.35	RX-BLD-345-3_2	-	411	0	1	9	-	-	104	525	525	-	-	152	-	-	-	-	6,168	7,967	-
4b.1.2.36	RX-BLD-345-3_3	-	5	1	1	-	7	-	3	17	17	-	-	-	32	-	-	-	2,760	91	-
4b.1.2.37	RX-BLD-345-4_2	-	5	0	0	1	-	-	1	7	7	-	-	9	-	-	-	-	380	91	-
4b.1.2.38	RX-BLD-345-5_2	-	47	1	4	30	-	-	17	99	99	-	-	535	-	-	-	-	21,741	844	-
4b.1.2.39	RX-BLD-345-6_2	-	60	1	3	24	-	-	19	107	107	-	-	425	-	-	-	-	17,249	1,107	-
4b.1.2.40	RX-BLD-345-7_2	-	35	1	3	25	-	-	13	77	77	-	-	434	-	-	-	-	17,613	638	-
4b.1.2.41	RX-BLD-345-8_2	-	37	0	2	19	-	-	12	70	70	-	-	326	-	-	-	-	13,225	653	-
4b.1.2.42	RX-BLD-DW_2	-	276	8	23	109	68	-	107	592	592	-	-	1,913	303	-	-	-	103,413	5,189	-
4b.1.2.43	RX-BLD-DW_3	-	491	129	197	-	1,446	-	527	2,790	2,790	-	-	-	6,396	-	-	-	543,518	9,060	-
4b.1.2	Totals	-	5,776	306	796	3,227	2,763	-	2,769	15,636	15,636	-	-	56,755	12,297	-	-	-	3,343,552	108,668	-
Turbine Building System Components																					
4b.1.3.1	TURB-BLD-232-1_2	-	127	2	10	77	-	-	45	262	262	-	-	1,363	-	-	-	-	55,351	2,391	-
4b.1.3.2	TURB-BLD-232-2_2	-	225	3	16	125	-	-	78	446	446	-	-	2,193	-	-	-	-	89,075	4,121	-
4b.1.3.3	TURB-BLD-232-3_2	-	143	1	7	55	-	-	45	252	252	-	-	975	-	-	-	-	39,615	2,624	-
4b.1.3.4	TURB-BLD-232-4_2	-	112	1	5	39	-	-	35	192	192	-	-	693	-	-	-	-	28,131	2,039	-
4b.1.3.5	TURB-BLD-232-5_2	-	150	1	9	67	-	-	49	276	276	-	-	1,175	-	-	-	-	47,717	2,772	-
4b.1.3.6	TURB-BLD-232-6_2	-	174	1	8	64	-	-	54	301	301	-	-	1,117	-	-	-	-	45,362	3,202	-
4b.1.3.7	TURB-BLD-232-7_2	-	117	1	6	43	-	-	36	202	202	-	-	751	-	-	-	-	30,484	2,154	-
4b.1.3.8	TURB-BLD-246-1_2	-	110	3	16	127	-	-	49	305	305	-	-	2,235	-	-	-	-	90,750	2,025	-
4b.1.3.9	TURB-BLD-248-1_2	-	110	2	11	88	-	-	42	253	253	-	-	1,542	-	-	-	-	62,614	2,048	-
4b.1.3.10	TURB-BLD-248-2_2	-	154	1	6	44	-	-	46	251	251	-	-	776	-	-	-	-	31,504	2,935	-
4b.1.3.11	TURB-BLD-248-3_2	-	287	8	49	379	-	-	137	860	860	-	-	6,672	-	-	-	-	270,947	5,319	-
4b.1.3.12	TURB-BLD-248-4_2	-	198	6	38	290	-	-	99	631	631	-	-	5,106	-	-	-	-	207,358	3,677	-
4b.1.3.13	TURB-BLD-248-5_2	-	51	1	5	42	-	-	20	120	120	-	-	744	-	-	-	-	30,197	936	-

Table E-2
Vermont Yankee Nuclear Power Station
Scenario 6: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Turbine Building System Components (continued)																					
4b.1.3.14	TURB-BLD-248-6_2	-	115	2	10	76	-	-	42	244	244	-	-	1,341	-	-	-	-	54,475	2,115	-
4b.1.3.15	TURB-BLD-248-7_2	-	71	2	12	89	-	-	33	206	206	-	-	1,567	-	-	-	-	63,655	1,306	-
4b.1.3.16	TURB-BLD-252-10_2	-	141	1	7	51	-	-	44	243	243	-	-	895	-	-	-	-	36,360	2,658	-
4b.1.3.17	TURB-BLD-252-13_2	-	123	1	5	36	-	-	37	201	201	-	-	626	-	-	-	-	25,426	2,252	-
4b.1.3.18	TURB-BLD-252-14_2	-	91	1	5	38	-	-	29	165	165	-	-	672	-	-	-	-	27,287	1,675	-
4b.1.3.19	TURB-BLD-252-1_2	-	89	3	18	137	-	-	46	293	293	-	-	2,414	-	-	-	-	98,015	1,605	-
4b.1.3.20	TURB-BLD-252-2_2	-	87	3	17	135	-	-	45	287	287	-	-	2,366	-	-	-	-	96,086	1,581	-
4b.1.3.21	TURB-BLD-252-3_2	-	21	0	1	11	-	-	7	41	41	-	-	196	-	-	-	-	7,972	379	-
4b.1.3.22	TURB-BLD-252-4_2	-	26	0	1	5	-	-	7	39	39	-	-	83	-	-	-	-	3,381	504	-
4b.1.3.23	TURB-BLD-252-5_2	-	178	1	8	58	-	-	54	299	299	-	-	1,021	-	-	-	-	41,454	3,373	-
4b.1.3.24	TURB-BLD-252-6_2	-	63	0	1	5	-	-	17	86	86	-	-	96	-	-	-	-	3,915	1,202	-
4b.1.3.25	TURB-BLD-252-7_2	-	73	2	14	104	-	-	36	229	229	-	-	1,831	-	-	-	-	74,360	1,194	-
4b.1.3.26	TURB-BLD-252-8_2	-	25	0	2	14	-	-	9	50	50	-	-	240	-	-	-	-	9,763	422	-
4b.1.3.27	TURB-BLD-252-9_2	-	104	2	15	119	-	-	46	288	288	-	-	2,095	-	-	-	-	85,062	1,739	-
4b.1.3.28	TURB-BLD-272-1_2	-	27	1	6	43	-	-	14	90	90	-	-	750	-	-	-	-	30,443	503	-
4b.1.3.29	TURB-BLD-272-3_2	-	324	3	18	139	-	-	105	588	588	-	-	2,442	-	-	-	-	99,166	5,817	-
4b.1.3.30	TURB-BLD-272-4_2	-	68	2	13	104	-	-	35	222	222	-	-	1,824	-	-	-	-	74,084	1,103	-
4b.1.3.31	TURB-BLD-272-5_2	-	51	1	9	68	-	-	24	154	154	-	-	1,199	-	-	-	-	48,693	776	-
4b.1.3.32	TURB-BLD-272-6_2	-	70	2	13	102	-	-	35	222	222	-	-	1,792	-	-	-	-	72,779	1,065	-
4b.1.3.33	TURB-BLD-272-9_0	-	12	-	-	-	-	-	2	13	-	-	13	-	-	-	-	-	-	212	-
4b.1.3	Totals	-	3,714	59	360	2,774	-	-	1,403	8,311	8,298	-	13	48,792	-	-	-	-	1,981,480	67,725	-
Control/Radwaste/Other Building System Components																					
4b.1.4.1	CONT-BLD-248-1_0	-	144	-	-	-	-	-	22	165	-	-	165	-	-	-	-	-	-	2,578	-
4b.1.4.2	CONT-BLD-248-1_2	-	1	0	0	1	-	-	0	2	2	-	-	9	-	-	-	-	372	10	-
4b.1.4.3	CONT-BLD-248-2_0	-	4	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	74	-
4b.1.4.4	CONT-BLD-262-1_0	-	110	-	-	-	-	-	16	126	-	-	126	-	-	-	-	-	-	1,974	-
4b.1.4.5	CONT-BLD-272-1_0	-	48	-	-	-	-	-	7	55	-	-	55	-	-	-	-	-	-	874	-
4b.1.4.6	CST-BASE-TRENCH_2	-	349	8	46	357	-	-	149	909	909	-	-	6,273	-	-	-	-	254,747	6,391	-
4b.1.4.7	CT_0	-	205	-	-	-	-	-	31	236	-	-	236	-	-	-	-	-	-	3,726	-
4b.1.4.8	DISCHARGE-STR_0	-	61	-	-	-	-	-	9	70	-	-	70	-	-	-	-	-	-	1,111	-
4b.1.4.9	DST-BASE_0	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	367	-
4b.1.4.10	INTAKE-STR_0	-	148	-	-	-	-	-	22	170	-	-	170	-	-	-	-	-	-	2,675	-
4b.1.4.11	NORTH-WAREHOUSE_2	-	26	0	1	9	-	-	8	45	45	-	-	165	-	-	-	-	6,694	477	-
4b.1.4.12	RW-BLD-230-1_3	-	93	12	18	-	133	-	60	317	317	-	-	-	721	-	-	-	50,021	1,745	-
4b.1.4.13	RW-BLD-230-2_3	-	122	18	26	-	191	-	84	441	441	-	-	-	1,051	-	-	-	71,955	2,282	-
4b.1.4.14	RW-BLD-230-3_3	-	53	5	7	-	51	-	28	143	143	-	-	-	238	-	-	-	19,202	974	-
4b.1.4.15	RW-BLD-230-4_3	-	37	4	6	-	46	-	22	116	116	-	-	-	249	-	-	-	17,241	697	-
4b.1.4.16	RW-BLD-230-5_3	-	29	3	4	-	32	-	16	84	84	-	-	-	171	-	-	-	12,002	545	-
4b.1.4.17	RW-BLD-230-7_3	-	141	12	18	-	134	-	73	378	378	-	-	-	594	-	-	-	50,458	2,509	-
4b.1.4.18	RW-BLD-246-8_2	-	40	2	3	5	18	-	16	83	83	-	-	92	79	-	-	-	10,493	712	-
4b.1.4.19	RW-BLD-252-10_2	-	13	0	0	3	-	-	4	21	21	-	-	52	-	-	-	-	2,100	257	-
4b.1.4.20	RW-BLD-252-11_2	-	12	0	1	7	-	-	4	24	24	-	-	120	-	-	-	-	4,869	222	-
4b.1.4.21	RW-BLD-252-12_2	-	90	1	9	67	-	-	34	201	201	-	-	1,179	-	-	-	-	47,870	1,614	-
4b.1.4.22	RW-BLD-252-13_2	-	73	2	7	47	8	-	29	166	166	-	-	819	44	-	-	-	36,442	1,321	-
4b.1.4.23	RW-BLD-252-1_2	-	63	0	2	16	-	-	19	100	100	-	-	283	-	-	-	-	11,513	1,203	-
4b.1.4.24	RW-BLD-252-2_2	-	35	1	4	20	11	-	15	87	87	-	-	344	49	-	-	-	18,159	665	-
4b.1.4.25	RW-BLD-252-3_2	-	15	0	1	5	-	-	5	25	25	-	-	86	-	-	-	-	3,500	282	-
4b.1.4.26	RW-BLD-252-4_2	-	25	0	1	9	-	-	8	43	43	-	-	150	-	-	-	-	6,078	481	-
4b.1.4.27	RW-BLD-252-5_2	-	37	0	3	20	-	-	13	72	72	-	-	351	-	-	-	-	14,258	666	-
4b.1.4.28	RW-BLD-252-6_3	-	69	8	10	-	75	-	38	200	200	-	-	-	331	-	-	-	28,118	1,267	-
4b.1.4.29	RW-BLD-252-7_3	-	23	2	3	-	23	-	12	64	64	-	-	-	123	-	-	-	8,810	434	-
4b.1.4.30	RW-BLD-252-8_2	-	41	1	3	11	12	-	15	84	84	-	-	198	53	-	-	-	12,560	739	-
4b.1.4.31	RW-BLD-252-9_3	-	44	3	5	-	37	-	21	110	110	-	-	-	182	-	-	-	13,871	802	-
4b.1.4.32	RW-BLD-264-1_2	-	4	0	0	0	-	-	1	5	5	-	-	2	-	-	-	-	86	78	-
4b.1.4.33	RW-BLD-264-2_2	-	5	0	0	1	-	-	1	7	7	-	-	11	-	-	-	-	454	100	-
4b.1.4.34	RW-BLD-264-RF_2	-	16	0	1	8	1	-	6	32	32	-	-	135	5	-	-	-	5,877	305	-
4b.1.4.35	RW-BLD-280-1_2	-	11	0	1	8	-	-	4	25	25	-	-	142	-	-	-	-	5,769	220	-
4b.1.4.36	RW-BLD-280-2_2	-	9	0	0	2	-	-	2	13	13	-	-	27	-	-	-	-	1,082	166	-
4b.1.4.37	SERV-BLD-248-1_2	-	68	1	3	25	-	-	21	118	118	-	-	440	-	-	-	-	17,867	1,263	-
4b.1.4.38	STACK_2	-	64	1	4	33	-	-	22	124	124	-	-	584	-	-	-	-	23,712	1,147	-

Table E-2
Vermont Yankee Nuclear Power Station
Scenario 6: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Control/Radwaste/Other Building System Components (continued)																					
4b.1.4.39	YARD-252-CONT_2	-	557	27	160	1,235	-	-	351	2,330	2,330	-	-	21,717	-	-	-	-	881,922	10,121	-
4b.1.4.40	YARD-252-CONT_3	-	44	4	6	-	44	-	23	122	122	-	-	-	195	-	-	-	16,564	713	-
4b.1.4.41	YARD-252_0	-	297	-	-	-	-	-	45	342	-	-	342	-	-	-	-	-	-	5,517	-
4b.1.4	Totals	-	3,246	117	356	1,886	817	-	1,260	7,683	6,490	-	1,193	33,178	4,085	-	-	-	1,654,669	59,299	-
4b.1.5	Scaffolding in support of decommissioning	-	890	38	18	138	-	-	250	1,332	1,332	-	-	2,187	-	-	-	-	98,393	17,585	-
Decontamination of Site Buildings																					
4b.1.6.1	Reactor	2,225	1,213	131	436	2,865	243	-	1,985	9,098	9,098	-	-	50,400	4,240	-	-	-	2,314,493	56,618	-
4b.1.6.2	AOG	98	49	1	17	1	25	-	70	261	261	-	-	23	474	-	-	-	41,966	2,308	-
4b.1.6.3	Control	1	1	0	0	-	0	-	1	3	3	-	-	-	9	-	-	-	786	23	-
4b.1.6.4	Equipment Lock	7	1	0	2	-	2	-	5	17	17	-	-	-	43	-	-	-	3,708	127	-
4b.1.6.5	LLRW	1	-	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	11	-
4b.1.6.6	Misc Cont Yard Structures	96	97	2	29	-	44	-	88	355	355	-	-	-	825	-	-	-	71,454	3,044	-
4b.1.6.7	North Warehouse	35	4	0	5	-	7	-	21	71	71	-	-	-	131	-	-	-	11,310	600	-
4b.1.6.8	Radwaste	73	73	2	26	2	40	-	69	286	286	-	-	44	760	-	-	-	66,006	2,271	-
4b.1.6.9	Radwaste Compactor	3	5	0	2	-	3	-	4	16	16	-	-	-	52	-	-	-	4,494	124	-
4b.1.6.10	Service	1	9	0	3	-	5	-	4	22	22	-	-	-	88	-	-	-	7,662	148	-
4b.1.6.11	Turbine	551	236	9	112	95	154	-	405	1,563	1,563	-	-	1,673	2,908	-	-	-	316,622	12,330	-
4b.1.6.12	Vent Stack	3	30	1	11	-	16	-	15	75	75	-	-	-	305	-	-	-	26,448	510	-
4b.1.6.13	Reactor (post fuel)	159	369	29	491	44	729	-	437	2,258	2,258	-	-	768	13,783	-	-	-	1,223,993	8,113	-
4b.1.6	Totals	3,252	2,086	175	1,133	3,008	1,269	-	3,103	14,026	14,026	-	-	52,908	23,619	-	-	-	4,088,943	86,227	-
4b.1	Subtotal Period 4b Activity Costs	3,252	15,712	694	2,663	11,033	4,849	-	8,785	46,989	45,783	-	1,206	193,819	40,001	-	-	-	11,167,040	339,504	-
Period 4b Additional Costs																					
4b.2.1	Remedial Action Support Surveys	-	-	-	-	-	-	3,043	913	3,955	3,955	-	-	-	-	-	-	-	-	20,800	-
4b.2.2	Soil Remediation	-	166	52	5,557	-	7,786	-	2,826	16,386	16,386	-	-	-	142,773	-	-	-	12,849,600	3,402	-
4b.2.3	ISFSI License Termination	-	33	5	32	-	75	1,280	224	1,648	-	1,648	-	-	1,231	-	-	-	102,129	3,165	2,560
4b.2.4	Underground Services Excavations	-	1,365	-	-	-	-	-	205	1,569	1,569	-	-	-	-	-	-	-	-	15,911	-
4b.2.5	Asbestos Remediation	-	1,082	3	138	-	602	-	442	2,268	2,268	-	-	-	9,938	-	-	-	129,188	13,287	-
4b.2.6	Septic Field Removal	-	-	-	-	-	-	1,724	259	1,983	1,983	-	-	-	-	-	-	-	-	-	-
4b.2	Subtotal Period 4b Additional Costs	-	2,645	59	5,728	-	8,463	6,047	4,869	27,810	26,162	1,648	-	-	153,942	-	-	-	13,080,920	56,565	2,560
Period 4b Collateral Costs																					
4b.3.1	Process decommissioning water waste	12	-	11	83	-	82	-	40	229	229	-	-	-	205	-	-	-	12,306	40	-
4b.3.3	Small tool allowance	-	268	-	-	-	-	-	40	308	308	-	-	-	-	-	-	-	-	-	-
4b.3.4	Decommissioning Equipment Disposition	-	-	115	67	420	-	-	84	686	686	-	-	6,667	-	-	-	-	300,000	88	-
4b.3.5	On-site survey and release of 25.85 tons clean metallic waste	-	-	-	-	-	-	28	3	31	31	-	-	-	-	-	-	-	-	-	-
4b.3	Subtotal Period 4b Collateral Costs	12	268	126	150	420	82	28	168	1,254	1,254	-	-	6,667	205	-	-	-	312,306	128	-
Period 4b Period-Dependent Costs																					
4b.4.1	Decon supplies	1,365	-	-	-	-	-	-	341	1,706	1,706	-	-	-	-	-	-	-	-	-	-
4b.4.2	Insurance	-	-	-	-	-	-	1,028	103	1,131	1,131	-	-	-	-	-	-	-	-	-	-
4b.4.3	Property taxes	-	-	-	-	-	-	17	2	18	18	-	-	-	-	-	-	-	-	-	-
4b.4.4	Health physics supplies	-	2,101	-	-	-	-	-	525	2,626	2,626	-	-	-	-	-	-	-	-	-	-
4b.4.5	Heavy equipment rental	-	3,595	-	-	-	-	-	539	4,134	4,134	-	-	-	-	-	-	-	-	-	-
4b.4.6	Disposal of DAW generated	-	-	103	96	-	444	-	136	779	779	-	-	-	5,986	-	-	-	119,715	195	-
4b.4.7	Plant energy budget	-	-	-	-	-	-	2,164	325	2,489	2,489	-	-	-	-	-	-	-	-	-	-
4b.4.8	NRC Fees	-	-	-	-	-	-	1,231	123	1,354	1,354	-	-	-	-	-	-	-	-	-	-
4b.4.9	Site O&M	-	-	-	-	-	-	511	77	588	588	-	-	-	-	-	-	-	-	-	-
4b.4.10	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	954	143	1,097	1,097	-	-	-	-	-	-	-	-	-	-
4b.4.11	Corporate A&G	-	-	-	-	-	-	4,836	725	5,561	5,561	-	-	-	-	-	-	-	-	-	-
4b.4.12	Security Staff Cost	-	-	-	-	-	-	2,757	414	3,170	3,170	-	-	-	-	-	-	-	-	-	160,357
4b.4.13	DOC Staff Cost	-	-	-	-	-	-	29,269	4,390	33,659	33,659	-	-	-	-	-	-	-	-	-	343,806
4b.4.14	Utility Staff Cost	-	-	-	-	-	-	35,158	5,274	40,431	40,431	-	-	-	-	-	-	-	-	-	605,509
4b.4	Subtotal Period 4b Period-Dependent Costs	1,365	5,695	103	96	-	444	77,924	13,116	98,744	98,744	-	-	-	5,986	-	-	-	119,715	195	1,109,671
4b.0	TOTAL PERIOD 4b COST	4,629	24,320	982	8,637	11,453	13,838	83,999	26,938	174,797	171,943	1,648	1,206	200,486	200,134	-	-	-	24,679,980	396,392	1,112,231

Table E-2
Vermont Yankee Nuclear Power Station
Scenario 6: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 4f - License Termination																					
Period 4f Direct Decommissioning Activities																					
4f.1.1	ORISE confirmatory survey	-	-	-	-	-	-	149	45	194	194	-	-	-	-	-	-	-	-	-	-
4f.1.2	Terminate license									a											
4f.1	Subtotal Period 4f Activity Costs	-	-	-	-	-	-	149	45	194	194	-	-	-	-	-	-	-	-	-	-
Period 4f Additional Costs																					
4f.2.1	License Termination Survey	-	-	-	-	-	-	5,451	1,635	7,087	7,087	-	-	-	-	-	-	-	-	64,820	-
4f.2.2	Confirmation and Verification Survey	-	-	-	-	-	-	1,651	495	2,146	2,146	-	-	-	-	-	-	-	-	9,784	-
4f.2	Subtotal Period 4f Additional Costs	-	-	-	-	-	-	7,102	2,131	9,232	9,232	-	-	-	-	-	-	-	-	74,604	-
Period 4f Collateral Costs																					
4f.3.1	DOC staff relocation expenses	-	-	-	-	-	-	1,030	154	1,184	1,184	-	-	-	-	-	-	-	-	-	-
4f.3	Subtotal Period 4f Collateral Costs	-	-	-	-	-	-	1,030	154	1,184	1,184	-	-	-	-	-	-	-	-	-	-
Period 4f Period-Dependent Costs																					
4f.4.1	Insurance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4f.4.2	Property taxes	-	-	-	-	-	-	5	1	6	6	-	-	-	-	-	-	-	-	-	-
4f.4.3	Health physics supplies	-	447	-	-	-	-	-	112	559	559	-	-	-	-	-	-	-	-	-	-
4f.4.4	Disposal of DAW generated	-	-	6	6	-	26	-	8	45	45	-	-	-	345	-	-	-	6,897	11	-
4f.4.5	Plant energy budget	-	-	-	-	-	-	174	26	200	200	-	-	-	-	-	-	-	-	-	-
4f.4.6	NRC Fees	-	-	-	-	-	-	371	37	408	408	-	-	-	-	-	-	-	-	-	-
4f.4.7	Site O&M	-	-	-	-	-	-	154	23	177	177	-	-	-	-	-	-	-	-	-	-
4f.4.8	Corporate A&G	-	-	-	-	-	-	921	138	1,059	1,059	-	-	-	-	-	-	-	-	-	-
4f.4.9	Security Staff Cost	-	-	-	-	-	-	318	48	366	366	-	-	-	-	-	-	-	-	-	18,514
4f.4.10	DOC Staff Cost	-	-	-	-	-	-	4,903	735	5,638	5,638	-	-	-	-	-	-	-	-	-	56,314
4f.4.11	Utility Staff Cost	-	-	-	-	-	-	4,789	718	5,507	5,507	-	-	-	-	-	-	-	-	-	73,286
4f.4	Subtotal Period 4f Period-Dependent Costs	-	447	6	6	-	26	11,634	1,846	13,964	13,964	-	-	-	345	-	-	-	6,897	11	148,114
4f.0	TOTAL PERIOD 4f COST	-	447	6	6	-	26	19,914	4,176	24,574	24,574	-	-	-	345	-	-	-	6,897	74,615	148,114
PERIOD 4 TOTALS		4,816	45,549	11,671	12,532	25,569	28,406	146,583	57,264	332,389	329,516	1,648	1,225	405,811	225,290	751	856	1,785	37,200,800	682,280	1,862,661
PERIOD 5b - Site Restoration																					
Period 5b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
5b.1.1.1	Reactor	-	4,030	-	-	-	-	-	605	4,635	-	-	4,635	-	-	-	-	-	-	47,743	-
5b.1.1.2	AOG	-	1,617	-	-	-	-	-	243	1,859	-	-	1,859	-	-	-	-	-	-	19,704	-
5b.1.1.3	Bottle Storage Shed	-	6	-	-	-	-	-	1	7	-	-	7	-	-	-	-	-	-	81	-
5b.1.1.4	Construction Office	-	58	-	-	-	-	-	9	67	-	-	67	-	-	-	-	-	-	961	-
5b.1.1.5	Control	-	174	-	-	-	-	-	26	200	-	-	200	-	-	-	-	-	-	2,292	-
5b.1.1.6	Control Access	-	35	-	-	-	-	-	5	40	-	-	40	-	-	-	-	-	-	549	-
5b.1.1.7	Cooling Towers	-	1,857	-	-	-	-	-	279	2,136	-	-	2,136	-	-	-	-	-	-	30,896	-
5b.1.1.8	Discharge & Aerating Structures	-	207	-	-	-	-	-	31	238	-	-	238	-	-	-	-	-	-	1,615	-
5b.1.1.9	Equipment Lock	-	76	-	-	-	-	-	11	87	-	-	87	-	-	-	-	-	-	1,039	-
5b.1.1.10	Gatehouse 1	-	10	-	-	-	-	-	2	12	-	-	12	-	-	-	-	-	-	148	-
5b.1.1.11	Gatehouse 2	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	287	-
5b.1.1.12	Intake Structure	-	372	-	-	-	-	-	56	427	-	-	427	-	-	-	-	-	-	4,004	-
5b.1.1.13	LLRW	-	77	-	-	-	-	-	12	89	-	-	89	-	-	-	-	-	-	1,126	-
5b.1.1.14	Misc Cont Yard Structures	-	143	-	-	-	-	-	21	164	-	-	164	-	-	-	-	-	-	1,992	-
5b.1.1.15	Misc Yard Structures	-	501	-	-	-	-	-	75	576	-	-	576	-	-	-	-	-	-	6,685	-
5b.1.1.16	New Warehouse	-	257	-	-	-	-	-	39	296	-	-	296	-	-	-	-	-	-	4,052	-
5b.1.1.17	North Warehouse	-	56	-	-	-	-	-	8	64	-	-	64	-	-	-	-	-	-	649	-
5b.1.1.18	Office Area (Turbine Bldg)	-	102	-	-	-	-	-	15	117	-	-	117	-	-	-	-	-	-	1,530	-
5b.1.1.19	Piping and Excavations	-	967	-	-	-	-	-	145	1,112	-	-	1,112	-	-	-	-	-	-	4,877	-
5b.1.1.20	Radwaste	-	238	-	-	-	-	-	36	273	-	-	273	-	-	-	-	-	-	2,964	-
5b.1.1.21	Radwaste Compactor	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	70	-
5b.1.1.22	Security Modifications	-	518	-	-	-	-	-	78	596	-	-	596	-	-	-	-	-	-	4,901	-
5b.1.1.23	Service	-	62	-	-	-	-	-	9	71	-	-	71	-	-	-	-	-	-	949	-

Table E-2
Vermont Yankee Nuclear Power Station
Scenario 6: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Demolition of Remaining Site Buildings (continued)																					
5b.1.1.24	Turbine	-	2,318	-	-	-	-	-	348	2,665	-	-	2,665	-	-	-	-	-	-	30,292	-
5b.1.1.25	Turbine Pedestal	-	480	-	-	-	-	-	72	552	-	-	552	-	-	-	-	-	-	5,277	-
5b.1.1.26	Turbine Storage Facility	-	112	-	-	-	-	-	17	128	-	-	128	-	-	-	-	-	-	1,986	-
5b.1.1.27	Vent Stack	-	8	-	-	-	-	-	1	10	-	-	10	-	-	-	-	-	-	126	-
5b.1.1.28	Reactor (post fuel)	-	31	-	-	-	-	-	5	35	-	-	35	-	-	-	-	-	-	535	-
5b.1.1	Totals	-	14,336	-	-	-	-	-	2,150	16,487	-	-	16,487	-	-	-	-	-	-	177,331	-
Site Closeout Activities																					
5b.1.2	Grade & landscape site	-	457	-	-	-	-	-	69	526	-	-	526	-	-	-	-	-	-	1,052	-
5b.1.3	Final report to NRC	-	-	-	-	-	-	183	27	210	210	-	-	-	-	-	-	-	-	-	1,560
5b.1	Subtotal Period 5b Activity Costs	-	14,794	-	-	-	-	183	2,246	17,223	210	-	17,013	-	-	-	-	-	-	178,383	1,560
Period 5b Additional Costs																					
5b.2.1	Concrete Processing	-	435	-	313	-	-	567	197	1,512	-	-	1,512	-	-	-	-	-	-	2,402	-
5b.2.2	ISFSI Demolitions and Site Restoration	-	1,298	-	-	-	-	78	206	1,582	-	1,582	-	-	-	-	-	-	-	17,348	160
5b.2.3	Intake & Discharge Cofferdams	-	621	-	-	-	-	-	93	714	-	-	714	-	-	-	-	-	-	6,400	-
5b.2.4	Backfill Underground Services Excavation	-	2,450	-	-	-	-	-	367	2,817	-	-	2,817	-	-	-	-	-	-	8,066	-
5b.2.5	Backfill Structures	-	1,931	-	-	-	-	-	290	2,220	-	-	2,220	-	-	-	-	-	-	6,358	-
5b.2	Subtotal Period 5b Additional Costs	-	6,734	-	313	-	-	645	1,154	8,846	-	1,582	7,263	-	-	-	-	-	-	40,574	160
Period 5b Collateral Costs																					
5b.3.1	Small tool allowance	-	168	-	-	-	-	-	25	194	-	-	194	-	-	-	-	-	-	-	-
5b.3.2	Site O&M	-	-	-	-	-	-	208	31	239	-	-	239	-	-	-	-	-	-	-	-
5b.3	Subtotal Period 5b Collateral Costs	-	168	-	-	-	-	208	56	433	-	-	433	-	-	-	-	-	-	-	-
Period 5b Period-Dependent Costs																					
5b.4.1	Insurance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5b.4.2	Property taxes	-	-	-	-	-	-	10	1	11	-	-	11	-	-	-	-	-	-	-	-
5b.4.3	Heavy equipment rental	-	3,144	-	-	-	-	-	472	3,615	-	-	3,615	-	-	-	-	-	-	-	-
5b.4.4	Plant energy budget	-	-	-	-	-	-	176	26	203	-	-	203	-	-	-	-	-	-	-	-
5b.4.5	Corporate A&G	-	-	-	-	-	-	464	70	533	-	-	533	-	-	-	-	-	-	-	-
5b.4.6	Security Staff Cost	-	-	-	-	-	-	646	97	743	-	-	743	-	-	-	-	-	-	-	37,577
5b.4.7	DOC Staff Cost	-	-	-	-	-	-	9,655	1,448	11,103	-	-	11,103	-	-	-	-	-	-	-	106,469
5b.4.8	Utility Staff Cost	-	-	-	-	-	-	4,083	612	4,695	-	-	4,695	-	-	-	-	-	-	-	61,063
5b.4	Subtotal Period 5b Period-Dependent Costs	-	3,144	-	-	-	-	15,033	2,726	20,903	-	-	20,903	-	-	-	-	-	-	-	205,109
5b.0	TOTAL PERIOD 5b COST	-	24,839	-	313	-	-	16,069	6,183	47,404	210	1,582	45,612	-	-	-	-	-	-	218,957	206,829
PERIOD 5 TOTALS		-	24,839	-	313	-	-	16,069	6,183	47,404	210	1,582	45,612	-	-	-	-	-	-	218,957	206,829
TOTAL COST TO DECOMMISSION		**12,076**	**79,893**	**12,468**	**15,743**	**27,261**	**33,751**	**732,658**	**153,723**	**1,067,573**	**622,571**	**397,211**	**47,792**	**409,099**	**257,486**	**751**	**856**	**1,785**	**38,898,830**	**992,184**	**8,635,686**

Table E-2
Vermont Yankee Nuclear Power Station
Scenario 6: 2032 Shutdown, SAFSTOR Alternative, Spent Fuel Off-Site 2082
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours

TOTAL COST TO DECOMMISSION WITH 16.82% CONTINGENCY:	$1,067,573	thousands of 2011 dollars
TOTAL NRC LICENSE TERMINATION COST IS 58.32% OR:	$622,571	thousands of 2011 dollars
SPENT FUEL MANAGEMENT COST IS 37.21% OR:	$397,211	thousands of 2011 dollars
NON-NUCLEAR DEMOLITION COST IS 4.48% OR:	$47,792	thousands of 2011 dollars
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC)	259,093	cubic feet
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED	1,785	cubic feet
TOTAL SCRAP METAL REMOVED:	19,091	tons
TOTAL CRAFT LABOR REQUIREMENTS:	992,184	man-hours

End Notes:
n/a - indicates that this activity not charged as decommissioning expense.
a - indicates that this activity performed by decommissioning staff.
0 - indicates that this value is less than 0.5 but is non-zero.
a cell containing " - " indicates a zero value

APPENDIX F

WORK DIFFICULTY ADJUSTMENT FACTORS

APPENDIX F

WORK DIFFICULTY ADJUSTMENT FACTORS

TLG has historically applied work difficulty adjustment factors in determining Unit Cost Factors to account for working in a radiological controlled environment. In performing an area-by-area decommissioning cost/schedule estimate the work difficulty factors are to be applied on an "area" basis, based on the nominal area conditions. Where practical, areas are established based on similar working conditions. The intent of the use of these factors is to provide the estimator an appropriate means to achieve an additional element of consistency within the estimate.

Access Factor:

Controlling Variables:

- Height of the component above the working floor
- Difficulty in working around the component (restricted access)

Source of Variable Information:

- Estimator's observation or judgment
- Plant drawings

Range of Access Factor Adjustments:

0% Components are accessible and located near a working level floor or platform

10% Scaffolding (component less than <12 feet above floor) is required to access the majority of the components *or* the area around the components is congested.

20% Scaffolding (component less than <12 feet above floor) is required to access the majority of the components *and* the area around the components is congested.

30% Scaffolding (component between 12 - 20 feet above floor) is required to access the majority of the components *or* the areas around the components are extremely congested.

40% Scaffolding (component between 20 - 45 feet above floor) is required to access the majority of the components).

50% Scaffolding (component greater than 45 feet above floor) is required to access the majority of the components).

Respiratory Protection Factor:

Controlling Variables:

- Component surface contamination levels (internal or external)
- Type of work (potential to create an airborne problem)
- General area surface contamination levels
- Site-specific requirements for maintaining respirator qualifications (initial qualification, requalification, etc.)
- Personal air sampler requirements

Sources of Variable Information:

- Radiation Work Permit Requirements
- Area Survey Maps
- Site Radiation Protection Program Manual

Range of Respiratory Protection Factor Adjustments:

0% Respiratory protection is not required (clean system or loose surface contamination has been removed).

25% Respiratory protection is only required during limited segments of the work (i.e. physical cutting).

50% Respiratory protection is continuously required while working on the component.

Radiation/ALARA Factor:

Controlling Variables:

- Component contact dose rate
- General area dose rate

- Site-specific requirements for maintaining radiation worker qualification (initial qualification, requalification, etc.)
- Dosimetry requirements

Sources of Variable Information:

- Area Survey Maps
- Site Radiation Protection Program Manual
- Radiation Work Permit Requirements

Range of Radiation/ALARA Factor Adjustments:
(Note surface contamination levels are principally accounted for in protective clothing requirements and respiratory protection requirements)

0% Component is clean and is not located in a radiological controlled area.

10% Component is located in a radiological controlled area (General Area Radiation field < 2 .5 mrem/hr).

20% Component is located in a radiological controlled area (General Area Radiation field between 2. 5 to 15 mrem/hr).

40% Component is located in a radiological controlled area (General Area Radiation field between 16 and 99 mrem/hr).

100% Component is located in a radiological controlled area (General Area Radiation field > 100 mrem/hr).

Protective Clothing Factor:

Controlling Variables:

- Component surface contamination levels (internal or external)
- General area surface contamination levels
- Type of activity (wet/dry work, potential to create a surface contamination problem)
- Site specific work schedule arrangements

Sources of Variable Information:

- Radiation Work Permit Requirements
- Area Survey Maps
- Site Radiation Protection Program Manual

Range of Protective Clothing Factor Adjustments (alternate site-specific schedules may dictate alternate adjustments):

0% Component is clean and is not located in a radiological controlled area.

30% Component is clean or contaminated and is located in a surface contamination controlled area. Work is to be completed in accordance with the requirements of an RWP, which specifies a single or double set of "PC's", or "PC's" with plastics.

50% Component is located in a surface contamination controlled area. Work is to be completed in accordance with the requirements of an RWP, which specifies "plastics" in addition to double PC's for protective clothing.

100% Component is located in a surface contamination controlled area. Work is to be completed in accordance with the requirements of an RWP, which specifies double "PC's" and double "plastics" (extremely wet or humid working environment).

Work Break Factor:

Controlling Variables:

- Site specific work schedule arrangements

Sources of Variable Information:

- Typical site work schedule

Range of Work Break Factor Adjustments:

8.33% Workday schedule outlined in AIF/NESP-036 (alternate site-specific schedules may dictate alternate adjustments).

TABLE F-1
WORK DIFFICULTY ADJUSTMENT FACTORS

Area Identification	Area Description	Area Designation	Work Difficulty Factors			
			Access	Respirator	ALARA	Clothing
AOG-BLD-FL1	Guard Beds A/B and Pipe Access	AOG-BLD-FL1-1	20%	25%	20%	30%
	Charcoal Beds	AOG-BLD-FL1-2	20%	25%	20%	30%
	A Recombiner	AOG-BLD-FL1-3	20%	25%	20%	30%
	B Recombiner	AOG-BLD-FL1-4	20%	25%	20%	30%
	Central Corridor	AOG-BLD-FL1-5	10%	25%	10%	30%
AOG-BLD-FL2	A Dryer Skid	AOG-BLD-FL2-1	20%	25%	20%	30%
	A Dryer Skid/Prefilter	AOG-BLD-FL2-2	10%	25%	10%	30%
	Entry-A train	AOG-BLD-FL2-3	10%	25%	10%	30%
	B Dryer Skid	AOG-BLD-FL2-4	20%	25%	20%	30%
	B Dryer Skid/Prefilter	AOG-BLD-FL2-5	20%	25%	10%	30%
	Entry-B train	AOG-BLD-FL2-6	10%	25%	10%	30%
	After Filters/Vacuum Pumps	AOG-BLD-FL2-7	10%	25%	10%	30%
	Valve Alley	AOG-BLD-FL2-8	10%	25%	10%	30%
	Central Corridor 2nd Flr	AOG-BLD-FL2-9	10%	25%	10%	30%
AOG-BLD-PENT		AOG-BLD-PENT	0%	25%	10%	30%
AOG-BLDG	Pipe Tunnel Area	AOG-BLDG-1	30%	25%	10%	30%
	Underground Utilities-(Piping)	AOG-BLDG-2	10%	25%	10%	30%
	AOG Bldg-Roof Area	AOG-BLDG-RF	0%	25%	10%	30%
CONT-BLD-248	4 KV Switchgear Room	CONT-BLD-248-1	20%	0%	0%	0%
	RW & RX Corridor	CONT-BLD-248-2	10%	25%	10%	30%
CONT-BLD-262	Cable Vault	CONT-BLD-262-1	20%	0%	0%	0%
CONT-RM-272	Control Room	CONT-RM-272-1	20%	0%	0%	0%
CST-BASE-TRENCH	Condensate Storage Tank & Moat	CST-BASE-TRENCH	10%	25%	10%	30%

Area Identification	Area Description	Area Designation	Work Difficulty Factors			
			Access	Respirator	ALARA	Clothing
CT	Cooling Towers/Yard South	CT	0%	0%	0%	0%
INTAKE-STR		INTAKE-STR	20%	0%	0%	0%
DISCHARGE-STR		DISCHARGE-STR	20%	0%	0%	0%
DST-BASE	Demineralized Water Storage Tank	DST-BASE	20%	0%	0%	0%
LL-RW-SITE		LL-RW-SITE	0%	0%	10%	0%
NORTH-WAREHOUSE	North Warehouse-RCA	NORTH-WAREHOUSE	0%	25%	10%	30%
RW-BLD-230	Condensate separators A/B	RW-BLD-230-1	30%	50%	40%	50%
	Waste/Floor Drain Coll Tnks	RW-BLD-230-2	30%	50%	40%	50%
	Spent Resin Tnk/Pumps	RW-BLD-230-3	30%	50%	40%	50%
	Waste Sludge Tank	RW-BLD-230-4	30%	50%	40%	50%
	Chem Waste Tank	RW-BLD-230-5	30%	50%	40%	50%
	Sump/Central Area	RW-BLD-230-7	20%	25%	20%	30%
RW-BLD-246-8	Pipe Tunnel Area	RW-BLD-246-8	30%	50%	40%	30%
RW-BLD-252	Control Room-RWB	RW-BLD-252-1	10%	25%	10%	30%
	Cask Room--Loading Bay	RW-BLD-252-2	10%	25%	10%	30%
	Respirator Wash/Filters	RW-BLD-252-3	10%	25%	10%	30%
	Dress-Out Area	RW-BLD-252-4	10%	25%	10%	30%
	Waste Filter Air Tnk/Pumps	RW-BLD-252-5	20%	25%	10%	30%
	Holding Pump Alley	RW-BLD-252-6	20%	25%	20%	30%
	SFP Filter/Demin	RW-BLD-252-7	30%	50%	40%	50%
	Waste Sample Pump Room	RW-BLD-252-8	20%	25%	20%	30%
	Waste Demin/Coll Filter/Flr Drn Filter	RW-BLD-252-9	30%	50%	40%	50%
	Center Corrridor/Area	RW-BLD-252-10	10%	25%	10%	30%
	Compactor Area-Bldg	RW-BLD-252-11	10%	25%	10%	30%
	Floor Drain/Waste Sample Tanks	RW-BLD-252-12	20%	25%	20%	30%
	Surge Tank	RW-BLD-252-13	20%	25%	20%	30%
RW-BLD-264	East Room	RW-BLD-264-1	10%	25%	10%	30%
	West Rooms	RW-BLD-264-2	10%	25%	10%	30%
	Radwaste Roof	RW-BLD-264-RF	10%	25%	10%	30%

Area Identification	Area Description	Area Designation	Work Difficulty Factors			
			Access	Respirator	ALARA	Clothing
RW-BLD-280	Penthouse East/West Rooms	RW-BLD-280-1	10%	25%	10%	30%
	Penthouse East/West Rooms	RW-BLD-280-2	10%	25%	10%	30%
RX-BLD-213	Torus elev 213	RX-BLD-213-1	30%	25%	20%	30%
	RHR A northeast corner	RX-BLD-213-2	20%	25%	20%	30%
	RHR B southeast corner	RX-BLD-213-3	20%	25%	20%	30%
	RCIC@213'	RX-BLD-213-4	20%	25%	20%	30%
	HPCI - SW Corner	RX-BLD-213-5	20%	25%	20%	30%
RX-BLD-232	TORUS elev 232	RX-BLD-232-1	30%	25%	20%	30%
	RHR A-northeast corner	RX-BLD-232-2	20%	25%	20%	30%
	RHR B southeast corner	RX-BLD-232-3	20%	25%	20%	30%
	RCIC@232'	RX-BLD-232-4	20%	25%	20%	30%
	CRD Pump room	RX-BLD-232-5	20%	25%	20%	30%
RX-BLD-252	Tip Room	RX-BLD-252-1	10%	25%	10%	30%
	Drywell Ante Room	RX-BLD-252-2	10%	25%	10%	30%
	CRD Rebuild Room	RX-BLD-252-3	20%	25%	10%	30%
	Steam Tunnel--250/261	RX-BLD-252-4	30%	25%	10%	30%
	North HCU's	RX-BLD-252-5	20%	25%	10%	30%
	South HCU's	RX-BLD-252-6	20%	25%	10%	30%
	East Corridor	RX-BLD-252-7	20%	25%	10%	30%
	Equipment Lock Area	RX-BLD-252-8	20%	25%	10%	30%
	CRD Control Station	RX-BLD-252-9	20%	25%	10%	30%
	Reactor Building Airlock	RX-BLD-252-10	20%	25%	10%	30%
RX-BLD-280	RWCU Pump Rooms A/B	RX-BLD-280-1	20%	25%	40%	30%
	RWCU Regen & Non-regen Hx Room	RX-BLD-280-2	20%	25%	100%	50%
	Motor Gen Sets A/B	RX-BLD-280-3	20%	25%	10%	30%
	Standby Gas Treatment A/B	RX-BLD-280-4	20%	25%	10%	30%
	Vital AC MG Set/Ex Gas Monitor	RX-BLD-280-5	20%	25%	10%	30%
	North Corridor	RX-BLD-280-6	20%	25%	10%	30%
	East Corridor	RX-BLD-280-7	20%	25%	10%	30%
	RX BLDG 280' Roof Area	RX-BLD-280-ROOF	0%	25%	10%	30%

Area Identification	Area Description	Area Designation	Work Difficulty Factors			
			Access	Respirator	ALARA	Clothing
RX-BLD-303	SFP Hx Room	RX-BLD-303-1	30%	50%	40%	50%
	CleanUp Phase Separator A/B	RX-BLD-303-2	30%	50%	100%	50%
	CU Sludge Mixing/Decant Pumps	RX-BLD-303-3	30%	50%	40%	50%
	RBCCW Hx Area	RX-BLD-303-4	10%	25%	10%	30%
	Hot Maintenance Shop (old CESA)	RX-BLD-303-5	10%	25%	10%	30%
	Calibration Lab	RX-BLD-303-6	10%	25%	10%	30%
	East Corridor/Equip Hatch	RX-BLD-303-7	10%	25%	10%	30%
	Primary Containment Air Comp	RX-BLD-303-8	10%	25%	10%	30%
RX-BLD-318	CleanUp Filter/Demin	RX-BLD-318-1	30%	50%	100%	50%
	CleanUp Demin Pumps	RX-BLD-318-2	20%	25%	40%	30%
	Skimmer Pump Room	RX-BLD-318-3	20%	25%	40%	30%
	Battery Racks/MG Sets	RX-BLD-318-4	10%	25%	10%	30%
	SLC Pumps/Demin	RX-BLD-318-5	10%	25%	10%	30%
	RBCCW Surge Tank	RX-BLD-318-6	10%	25%	10%	30%
	East Corridor/Equip Hatch	RX-BLD-318-7	10%	25%	10%	30%
RX-BLD-345	Reactor Cavity	RX-BLD-345-1	20%	50%	100%	50%
	Dryer Separator Storage	RX-BLD-345-2	20%	50%	100%	50%
	Spent Fuel Storage Pool	RX-BLD-345-3	20%	50%	100%	50%
	New Fuel Storage Vault	RX-BLD-345-4	10%	25%	10%	30%
	SW Laydown area	RX-BLD-345-5	10%	25%	10%	30%
	NE(Decon Area)	RX-BLD-345-6	10%	25%	10%	30%
	SE Corner-(Equipment Hatch area)	RX-BLD-345-7	10%	25%	10%	30%
	NW Laydown Area	RX-BLD-345-8	10%	25%	10%	30%
DRYWELL	Drywell	RX-BLD-DW	30%	50%	40%	30%
SERV-BLD-248	HP Check Point & Chem Labs	SERV-BLD-248-1	10%	25%	10%	30%
STACK	Stack all elevations	STACK	20%	25%	10%	30%
TURB-BLD-222	A Condenser	TURB-BLD-222-1	20%	25%	10%	30%
	B Condenser	TURB-BLD-222-2	20%	25%	10%	30%

Area Identification	Area Description	Area Designation	Work Difficulty Factors			
			Access	Respirator	ALARA	Clothing
	Heater Drain Pumps	TURB-BLD-222-3	20%	25%	10%	30%
	TBCCW Hx/Pumps	TURB-BLD-222-8	20%	25%	10%	30%
	Condensate Pumps A/B/C	TURB-BLD-222-9	20%	25%	10%	30%
	Condensate Backwash Rec.Tank Room	TURB-BLD-222-10	30%	25%	20%	30%
	Condensate Backwash Pump Room	TURB-BLD-222-11	20%	25%	10%	30%
TURB-BLD-228	Turb Lube Oil Storage/Pumps	TURB-BLD-228-1	20%	25%	10%	30%
	Reactor Feedwater Pumps A/B/C	TURB-BLD-228-2	20%	25%	10%	30%
	E3-LP Heaters A/B	TURB-BLD-228-3	20%	25%	10%	30%
	E4-LP Heaters A/B	TURB-BLD-228-4	20%	25%	10%	30%
	Moisture Sep A/B	TURB-BLD-228-5	20%	25%	10%	30%
	Moisture Sep C/D	TURB-BLD-228-6	20%	25%	10%	30%
	TB 228 @ under Stop/Bypass Valves	TURB-BLD-228-12	10%	25%	10%	30%
	Condensor Heater Bay West	TURB-BLD-228-13	10%	25%	10%	30%
TURB-BLD-232	Condensate Demins A-E	TURB-BLD-232-1	30%	25%	20%	30%
	Condensate Demin/Transfer Pumps	TURB-BLD-232-2	30%	25%	20%	30%
	Condensate Precoat Area	TURB-BLD-232-3	20%	25%	10%	30%
	Condensate/Demin Transfer Pumps	TURB-BLD-232-4	20%	25%	10%	30%
	Stator Liquid Cooling /H2 Seal oil	TURB-BLD-232-5	20%	25%	10%	30%
	Instrument Air Dryers	TURB-BLD-232-6	20%	25%	10%	30%
	Main Condenser Vacuum Pump	TURB-BLD-232-7	20%	25%	10%	30%
TURB-BLD-246	Steam Jet Air Ejectors	TURB-BLD-246-1	20%	25%	10%	30%
TURB-BLD-248	Turbine Oil Tk/Pumps/Hx	TURB-BLD-248-1	20%	25%	10%	30%
	North Corridor	TURB-BLD-248-2	10%	25%	10%	30%
	E1-HP Heaters A/B	TURB-BLD-248-3	20%	25%	10%	30%
	E2-HP Heaters C/D	TURB-BLD-248-4	20%	25%	10%	30%
	Turb Stop Valves	TURB-BLD-248-5	20%	25%	10%	30%
	Main Gen Bus/Coolers	TURB-BLD-248-6	20%	25%	10%	30%
	Turbine Bypass Valves	TURB-BLD-248-7	20%	25%	10%	30%

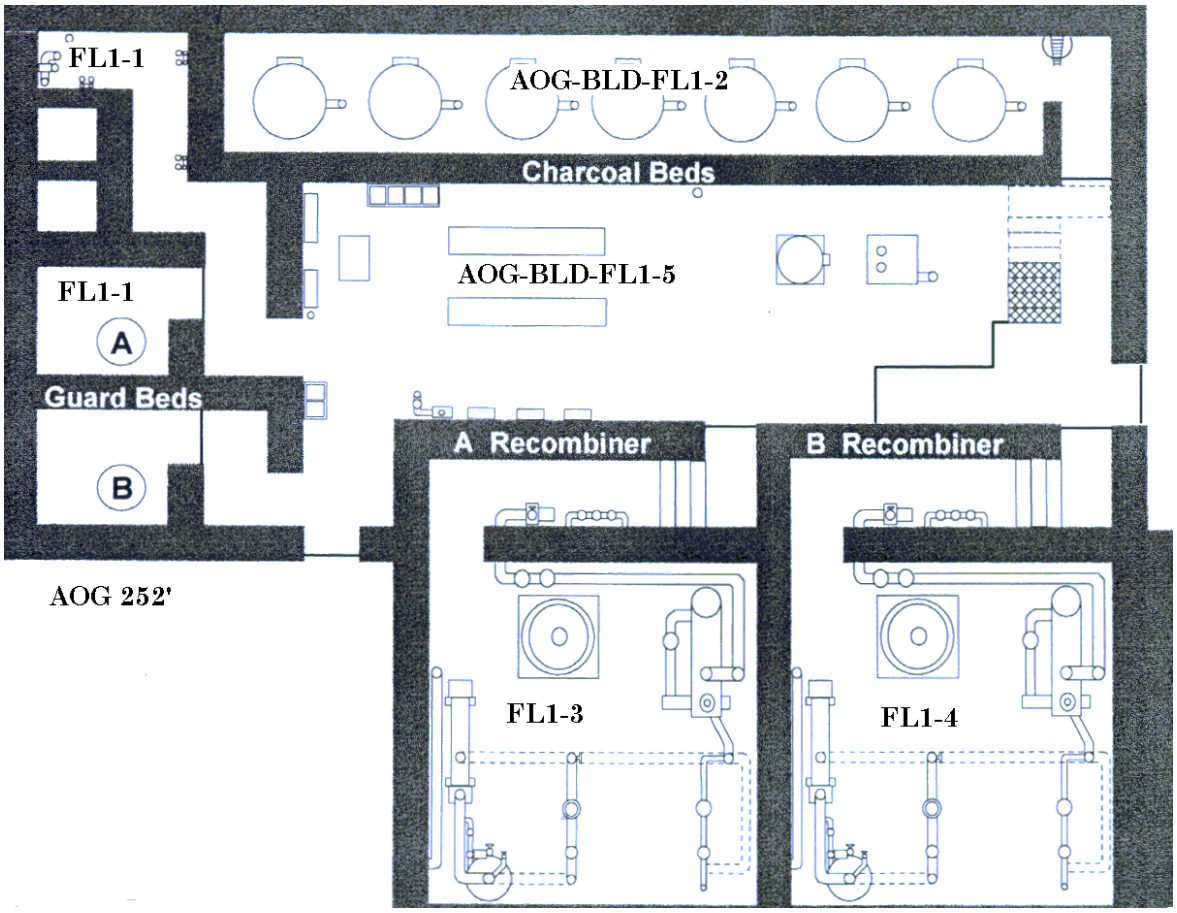
Area Identification	Area Description	Area Designation	Work Difficulty Factors			
			Access	Respirator	ALARA	Clothing
TURB-BLD-252	Diesel Generator A	TURB-BLD-252-1	20%	0%	10%	0%
	Diesel Generator B	TURB-BLD-252-2	20%	0%	10%	0%
	Diesel Oil Day Tanks	TURB-BLD-252-3	20%	25%	10%	30%
	TBCCW Surge Tank Area	TURB-BLD-252-4	10%	25%	10%	30%
	Decon Area	TURB-BLD-252-5	10%	25%	10%	30%
	Turb Loading Bay	TURB-BLD-252-6	10%	25%	10%	30%
	Heating Boiler/Blowdown Tank	TURB-BLD-252-7	20%	0%	0%	0%
	Boiler Oil Pumps	TURB-BLD-252-8	20%	0%	0%	0%
	Clearwell Tank/Chem Trtmt Skid	TURB-BLD-252-9	20%	0%	0%	0%
	Maintenance Shop	TURB-BLD-252-10	10%	25%	10%	30%
	Warehouse/Office	TURB-BLD-252-13	20%	0%	0%	0%
	Cond/Demin Corridor	TURB-BLD-252-14	10%	25%	10%	30%
TURB-BLD-272	Main Turbine	TURB-BLD-272-1	10%	25%	10%	30%
	Operating Deck	TURB-BLD-272-3	10%	25%	10%	30%
	Heating Vent.Supply Fan Room	TURB-BLD-272-4	20%	0%	0%	0%
	Heating Vent. Exhaust Fan Room	TURB-BLD-272-5	20%	0%	0%	0%
	AC Equipment (CR and Serv. Bldg)	TURB-BLD-272-6	20%	0%	0%	0%
	Maintenance Roof/DG Snubbers	TURB-BLD-272-9	0%	0%	0%	0%
YARD AREA	Yard Area	YARD-252	0%	0%	0%	0%
	Yard Area - North40	YARD-252-NORTH40	0%	0%	0%	0%
	Yard Cont. Piping-OG & RW	YARD-252-CONT	10%	25%	10%	30%

APPENDIX G

AREA MAPS

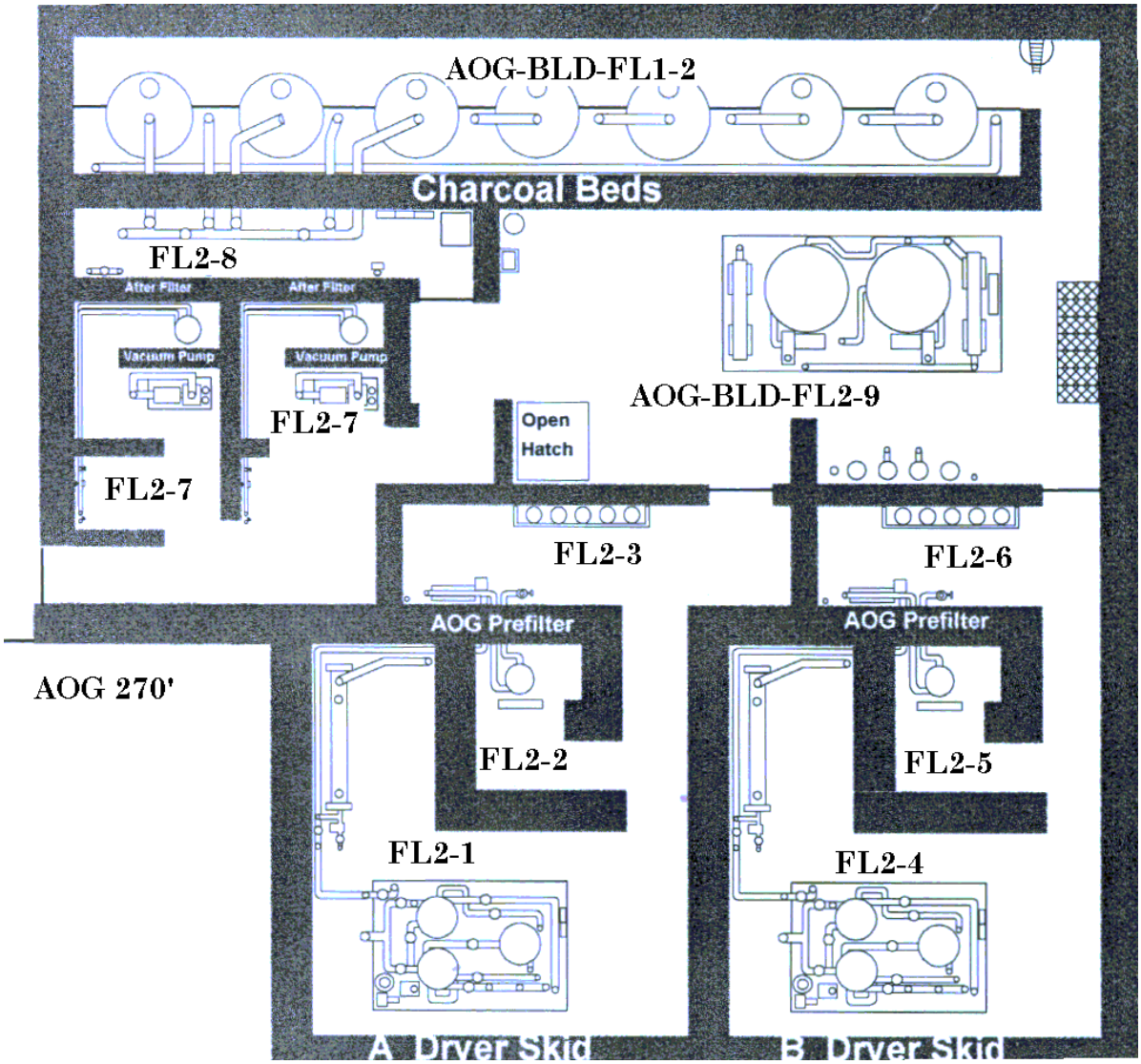
APPENDIX G

AOG BUILDING



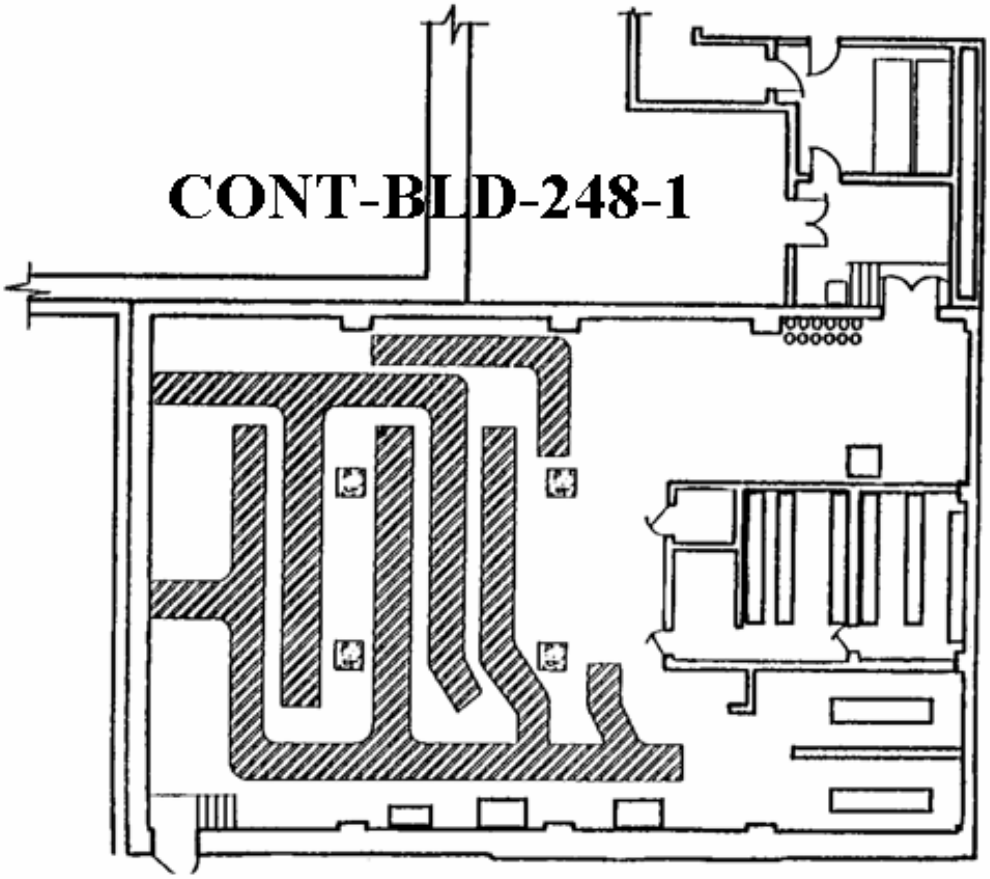
APPENDIX G

AOG BUILDING



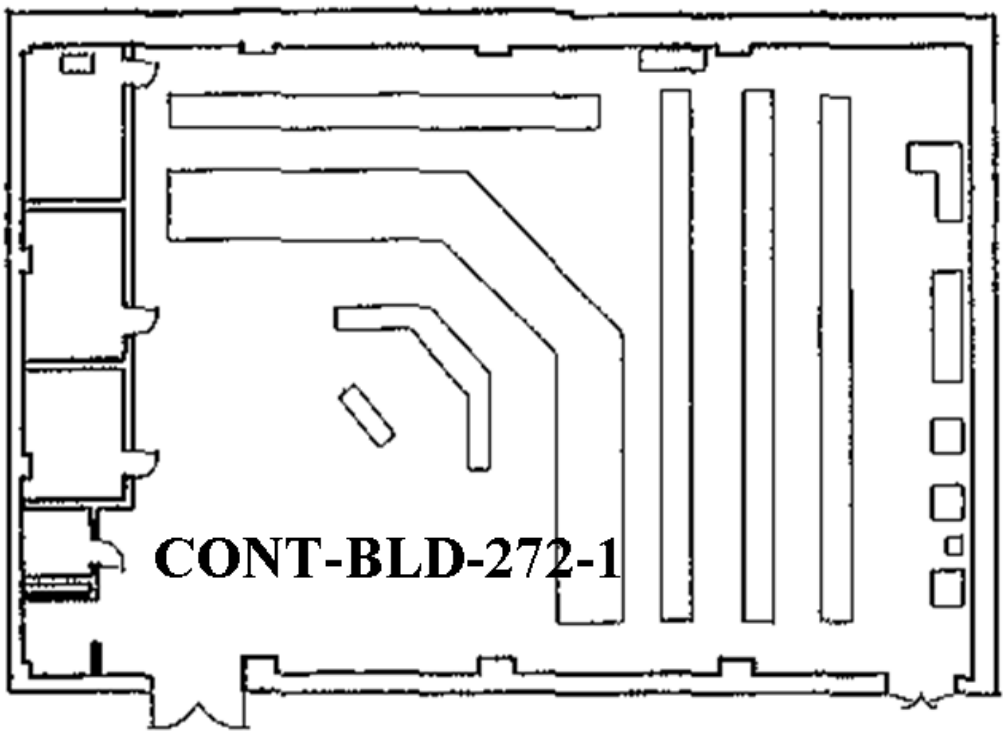
APPENDIX G

CONTROL BUILDING



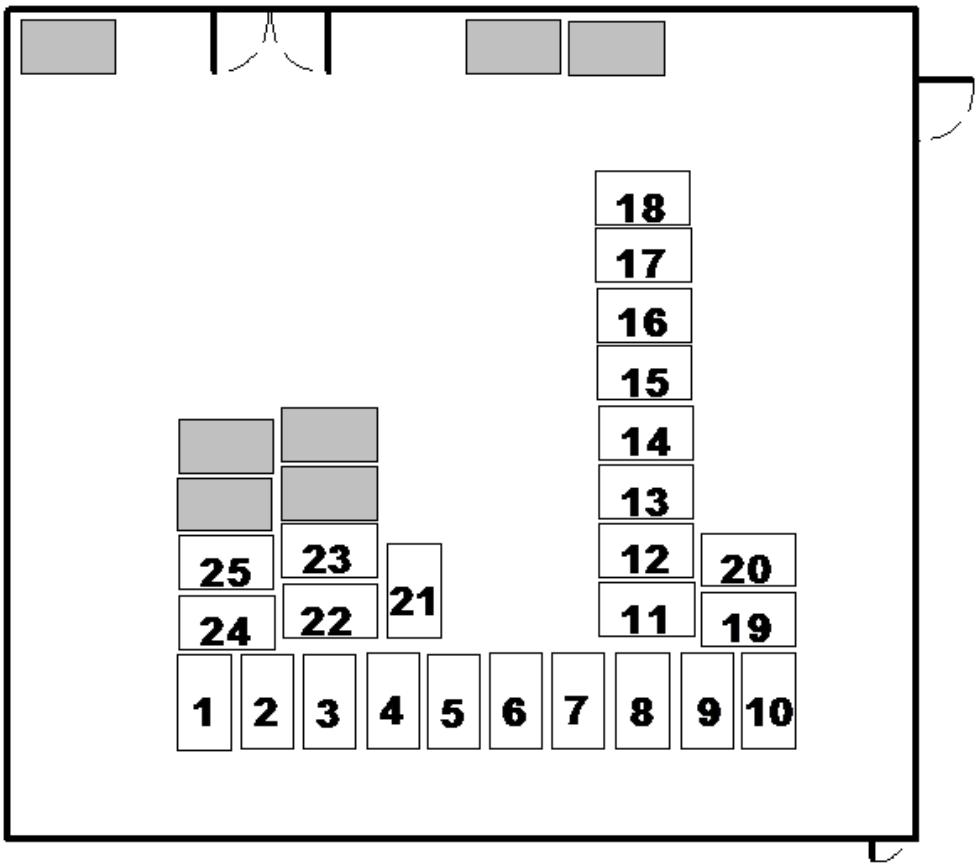
APPENDIX G

CONTROL BUILDING



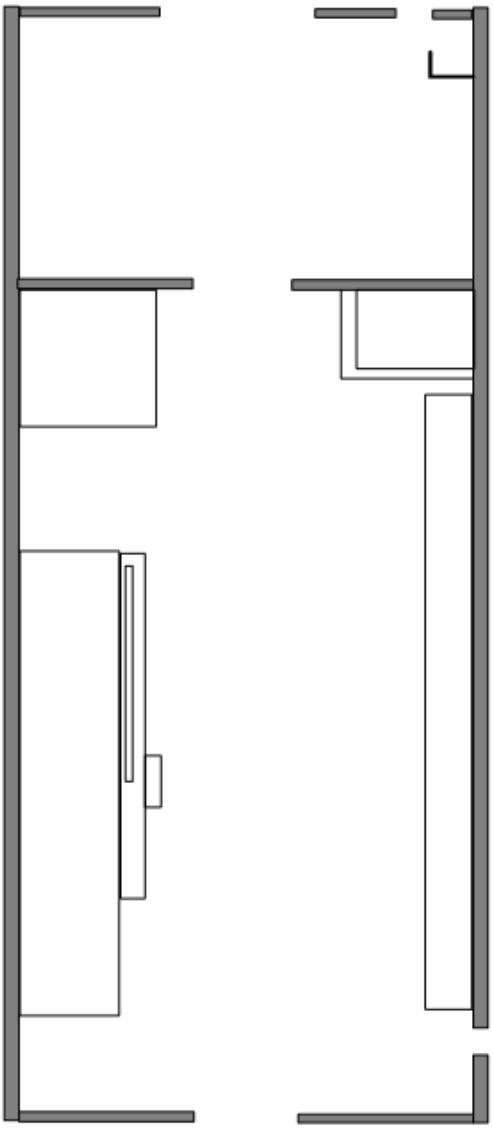
APPENDIX G

LOW-LEVEL RADIOACTIVE WASTE AREA



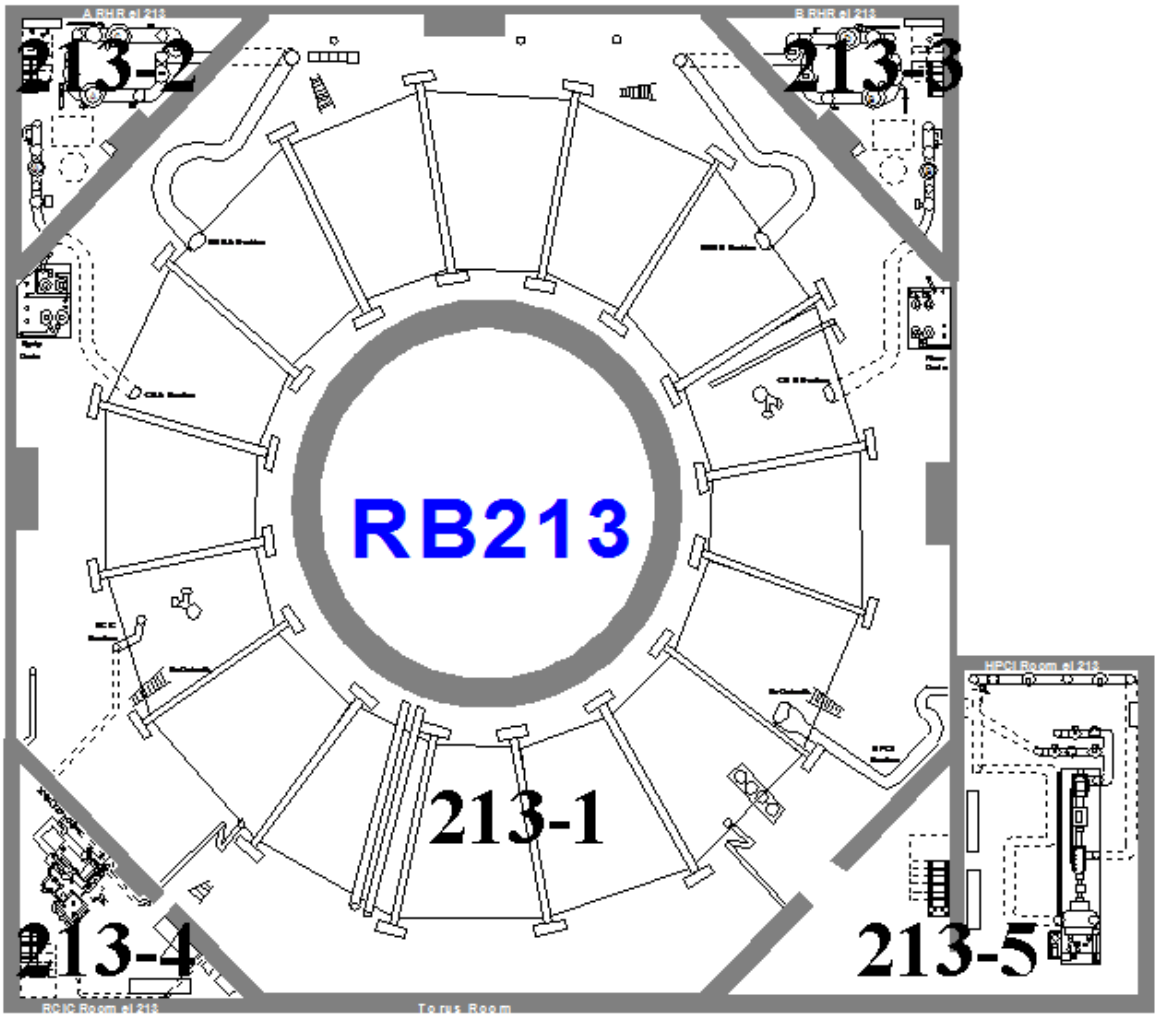
APPENDIX G

NORTH WAREHOUSE



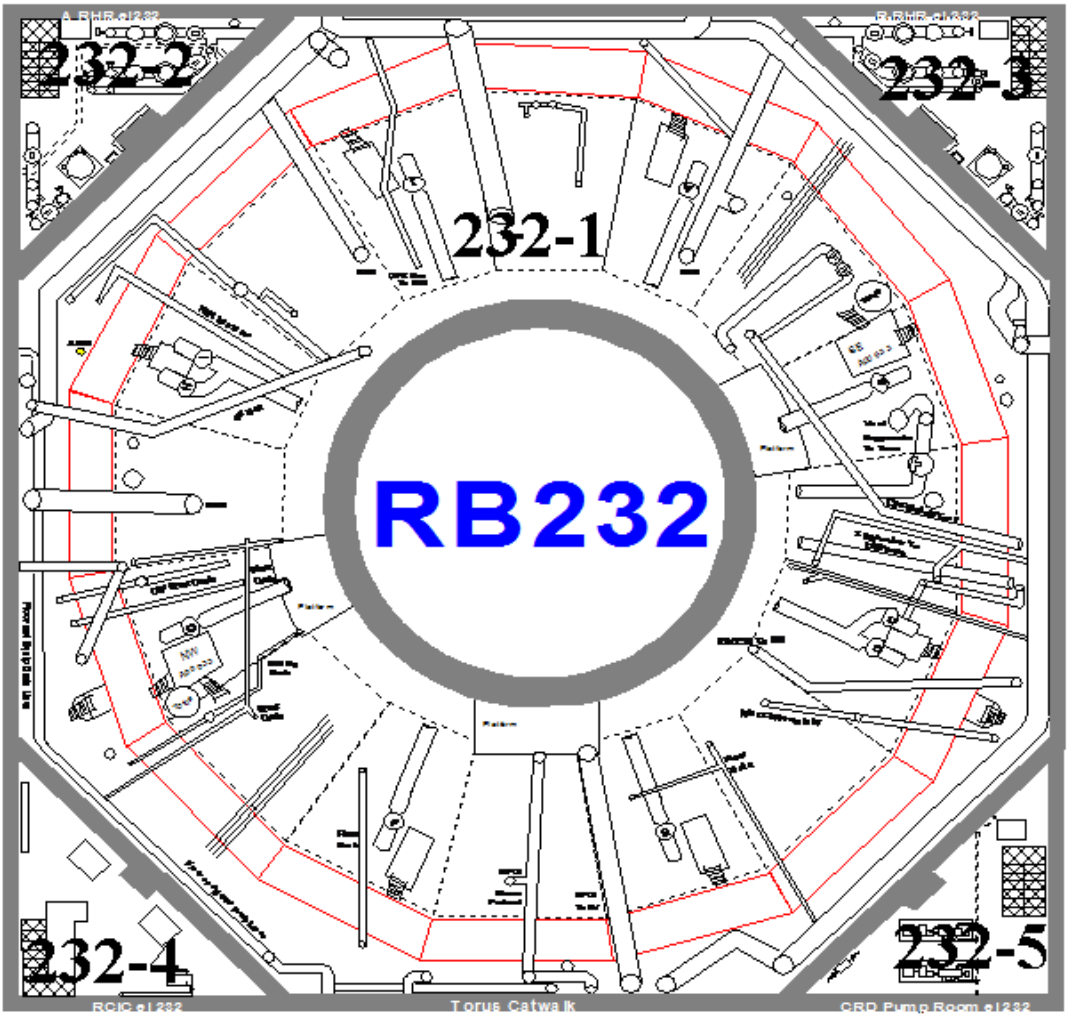
APPENDIX G

REACTOR BUILDING



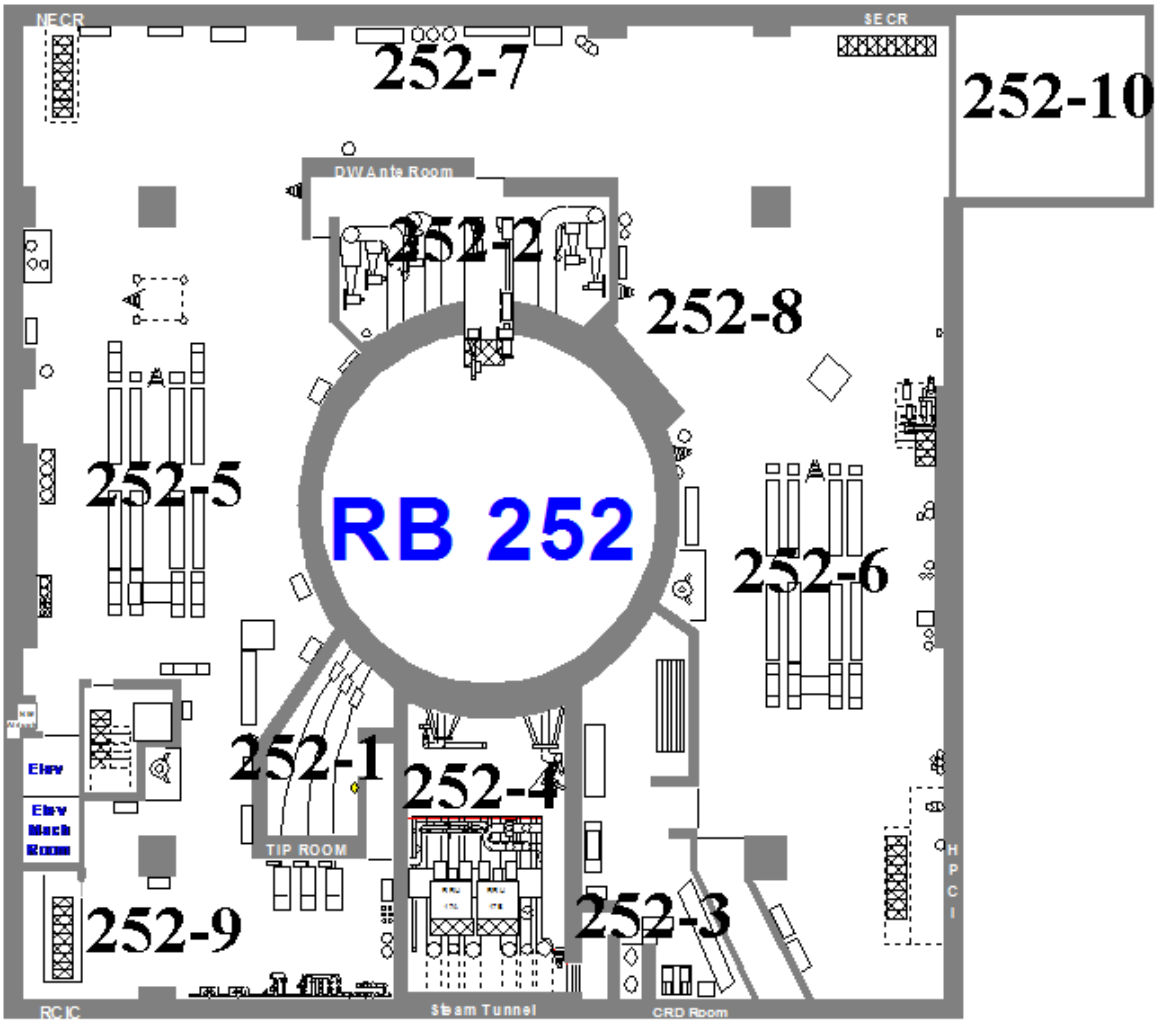
APPENDIX G

REACTOR BUILDING



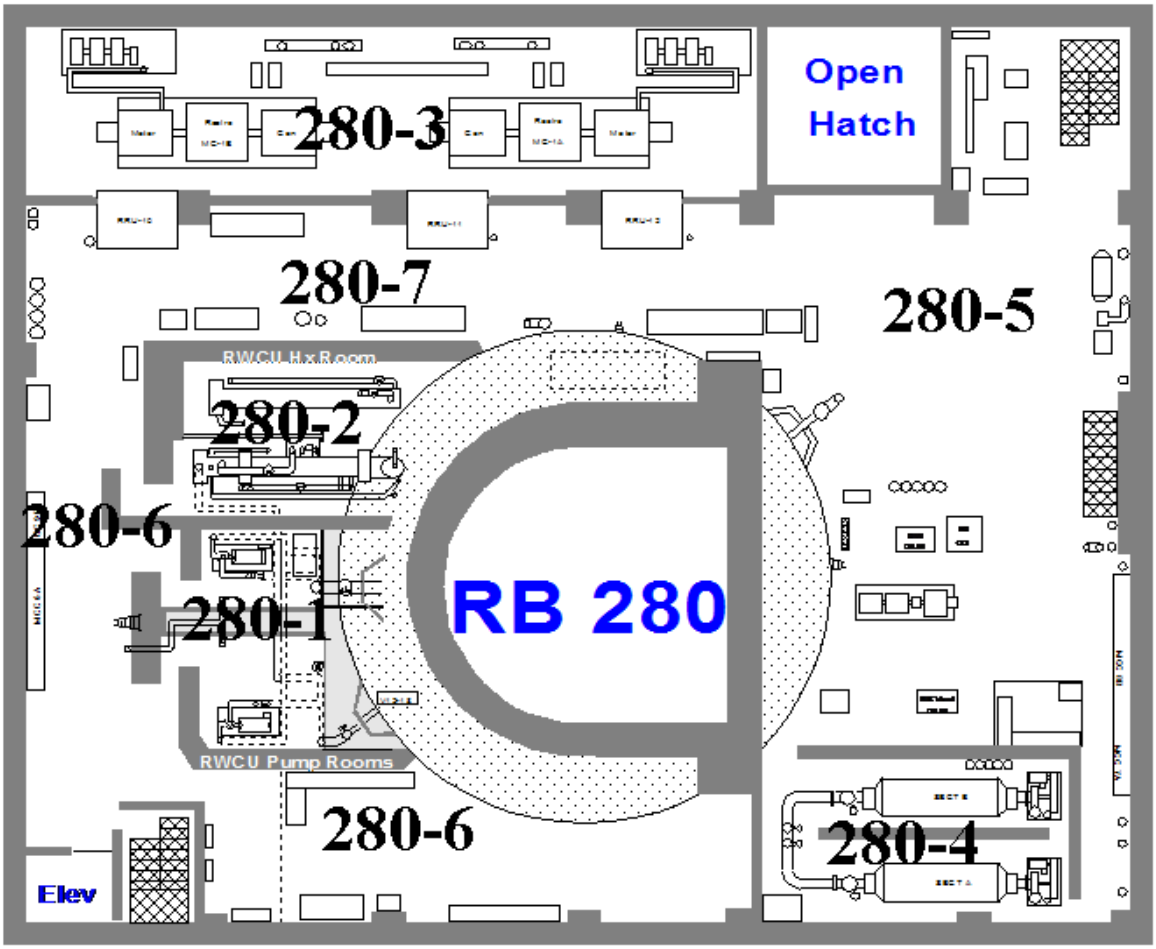
APPENDIX G

REACTOR BUILDING



APPENDIX G

REACTOR BUILDING



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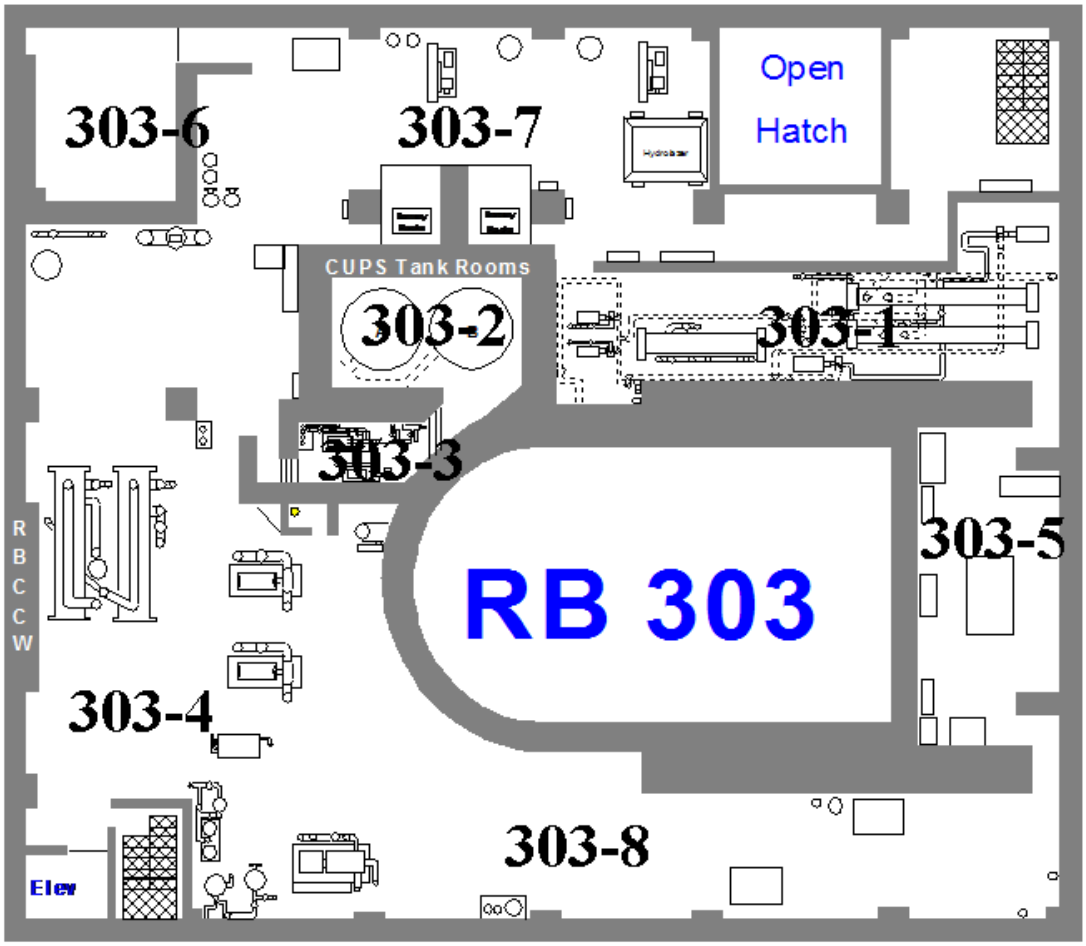
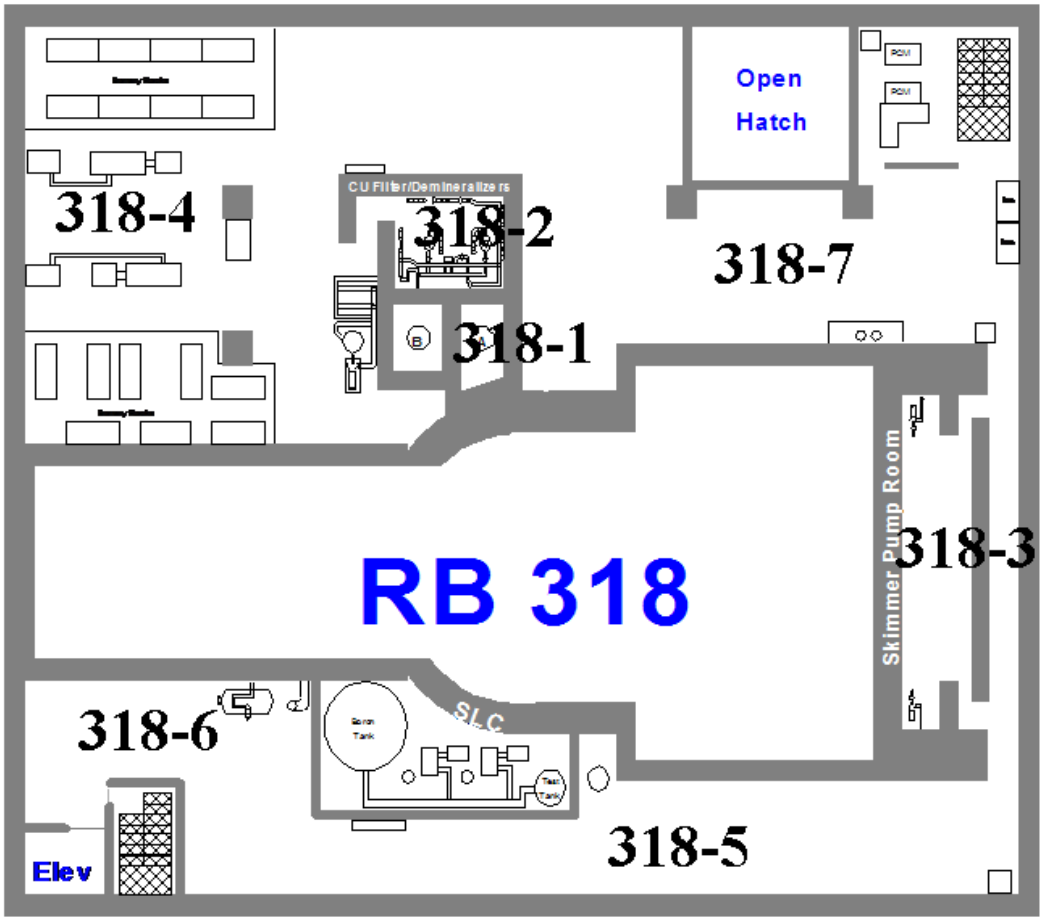
REACTOR BUILDING



APPENDIX G

REACTOR BUILDING



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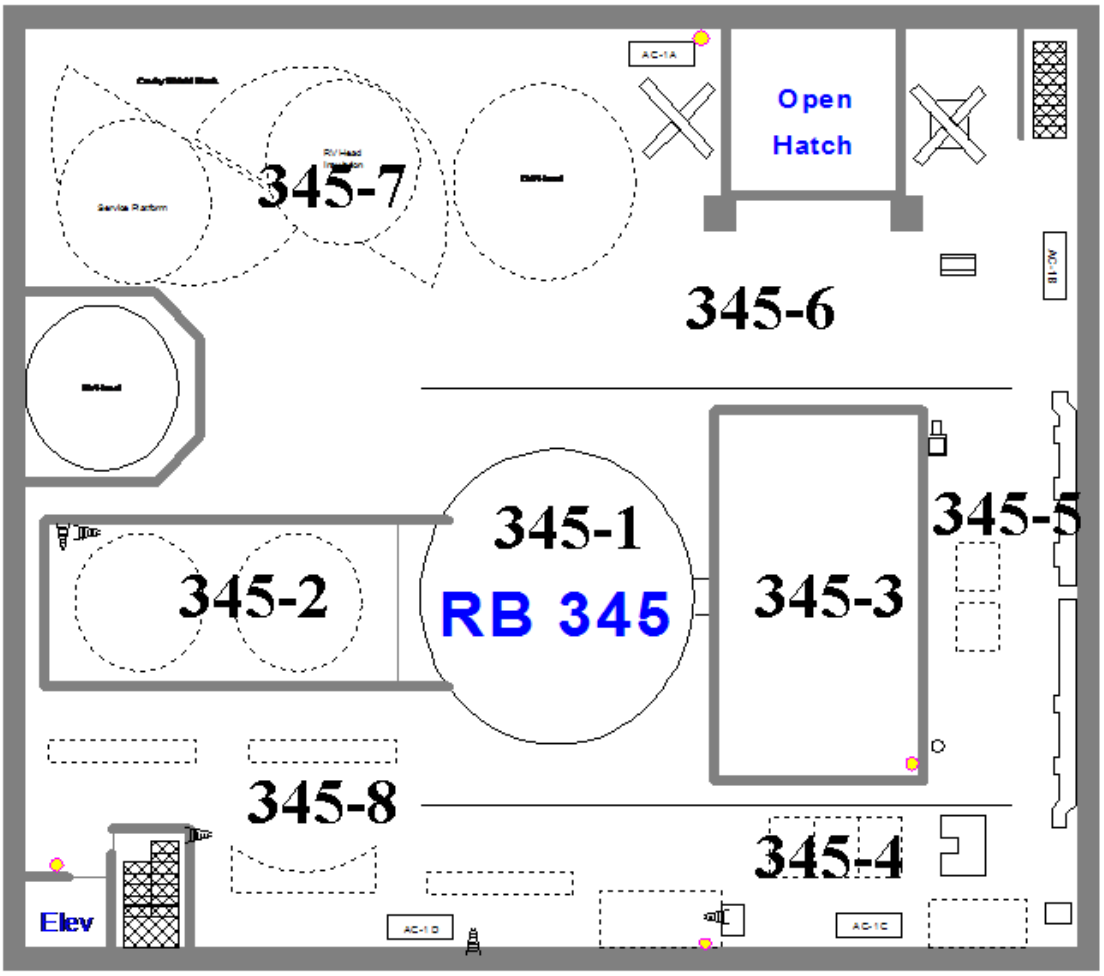
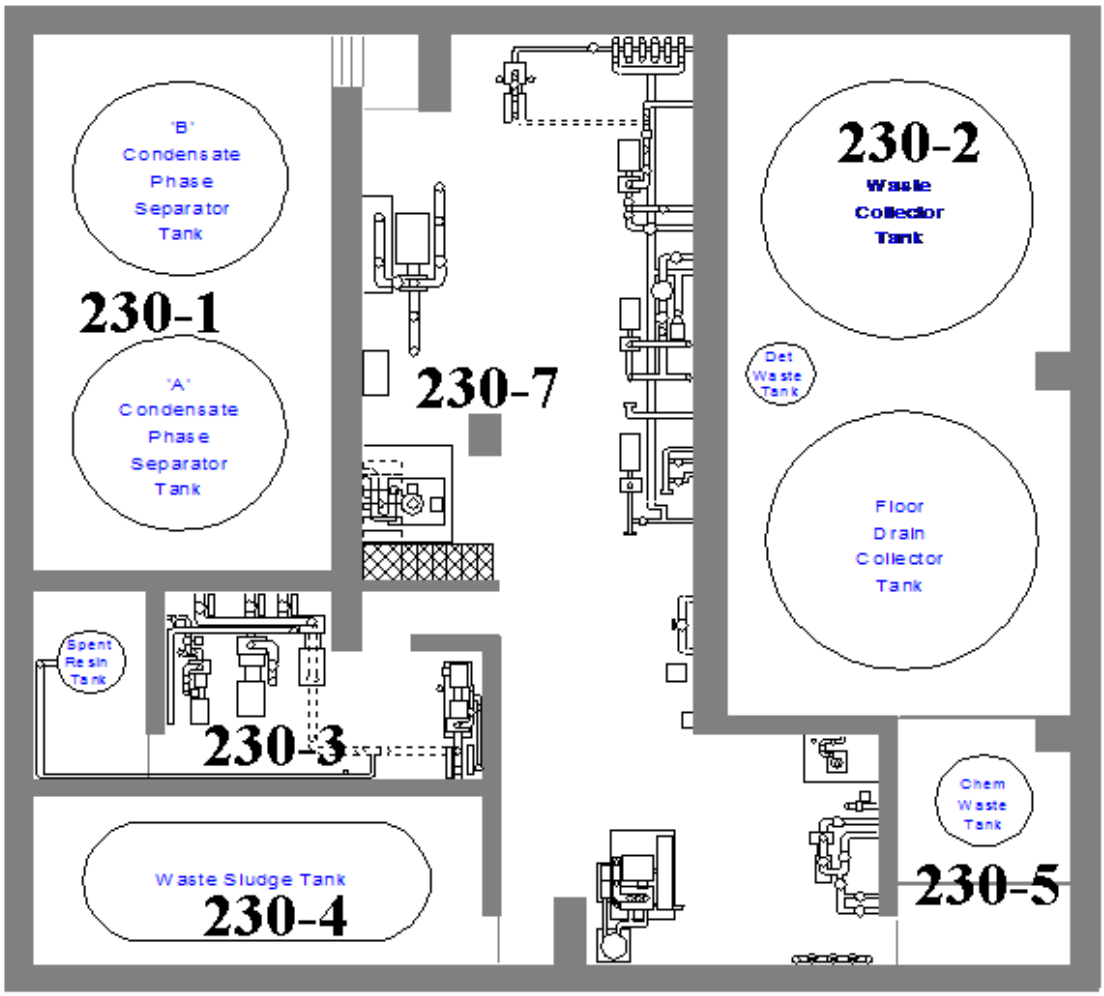
REACTOR BUILDING



APPENDIX G

RADIOLOGICAL WASTE BUILDING



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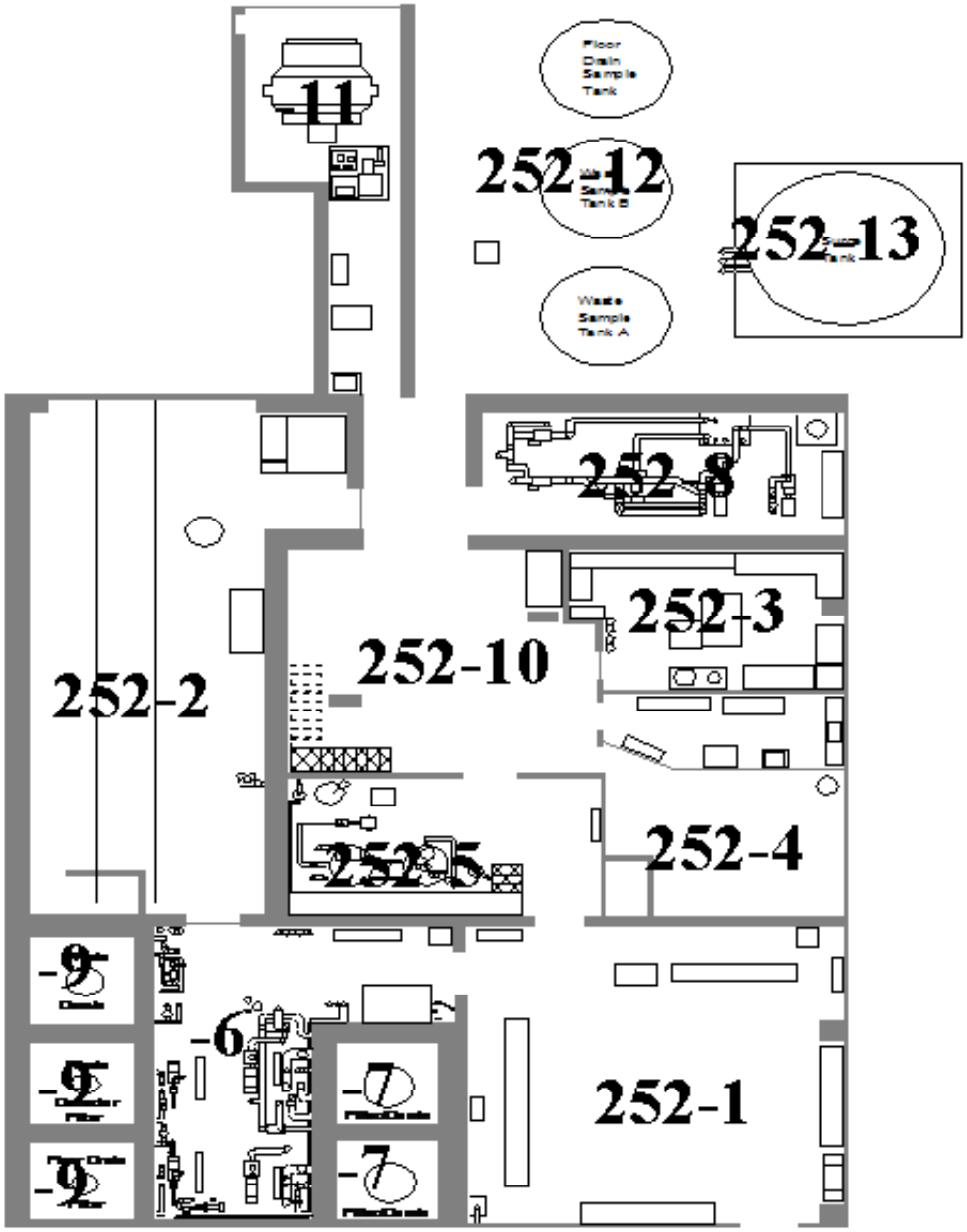
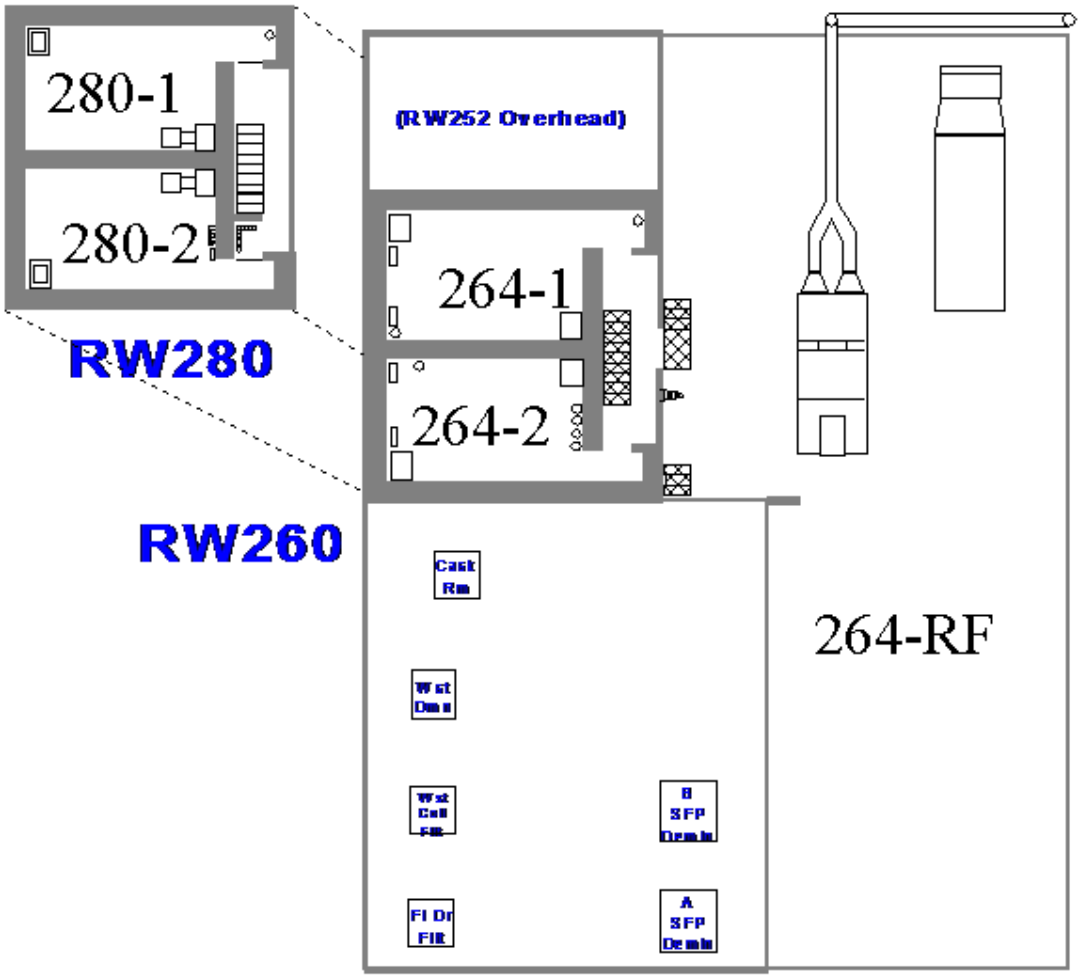
RADIOLOGICAL WASTE BUILDING



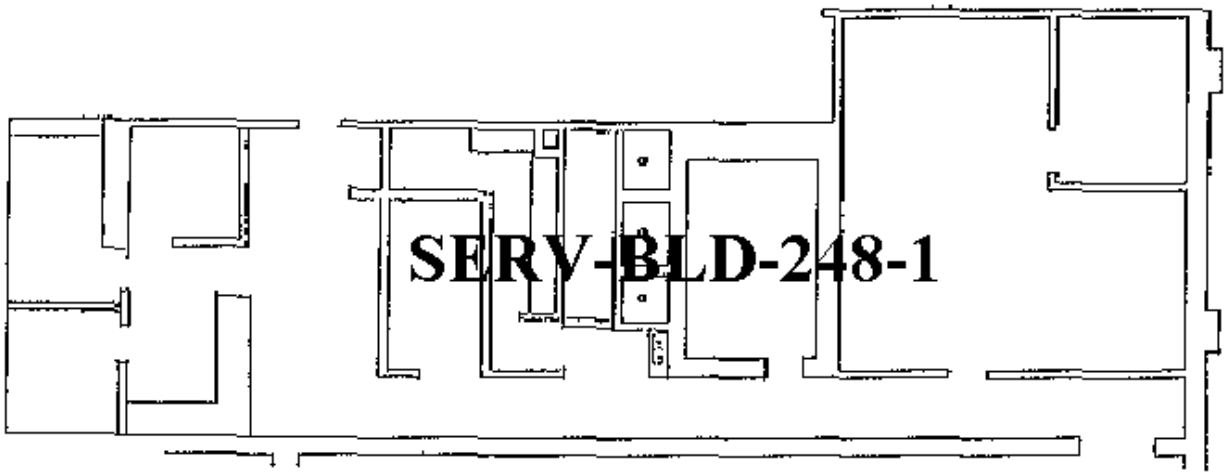
APPENDIX G

RADIOLOGICAL WASTE BUILDING



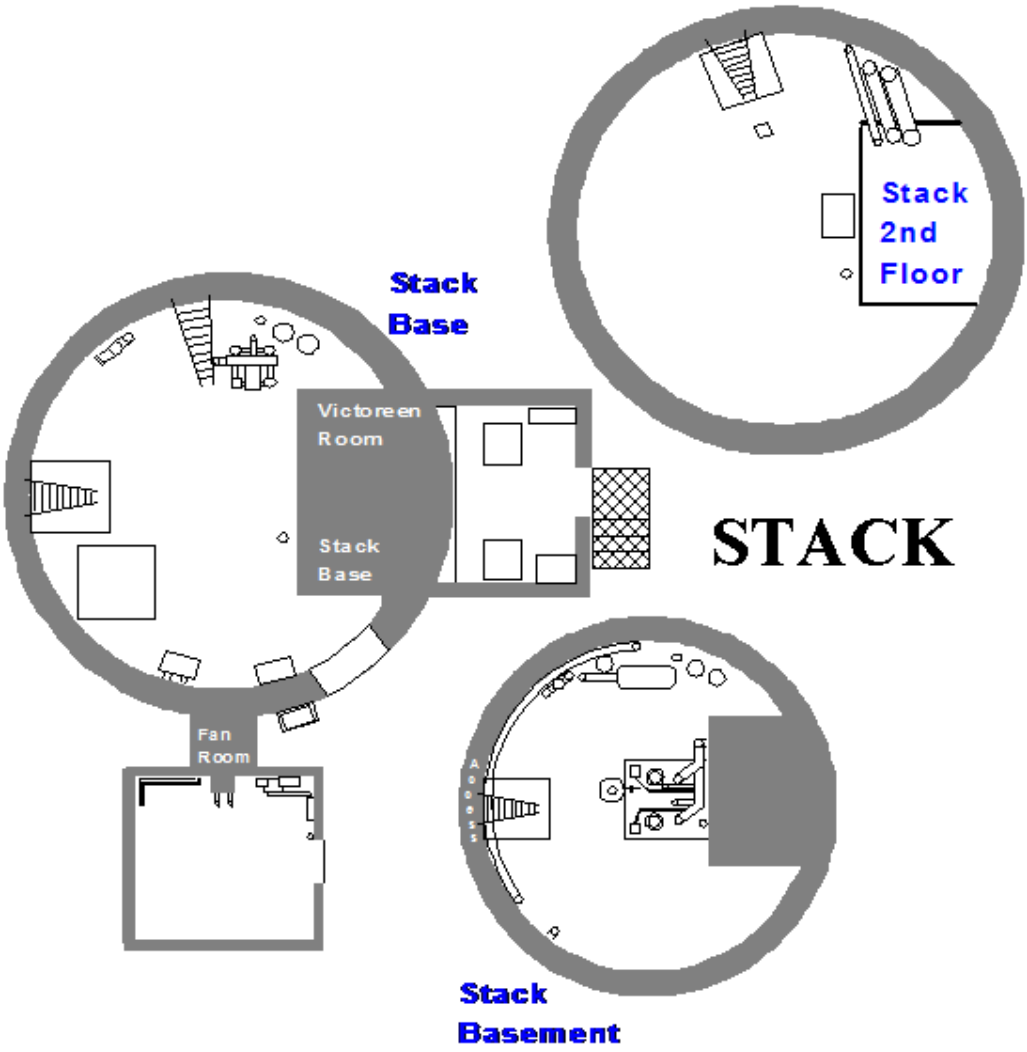
APPENDIX G

SERVICE BUILDING



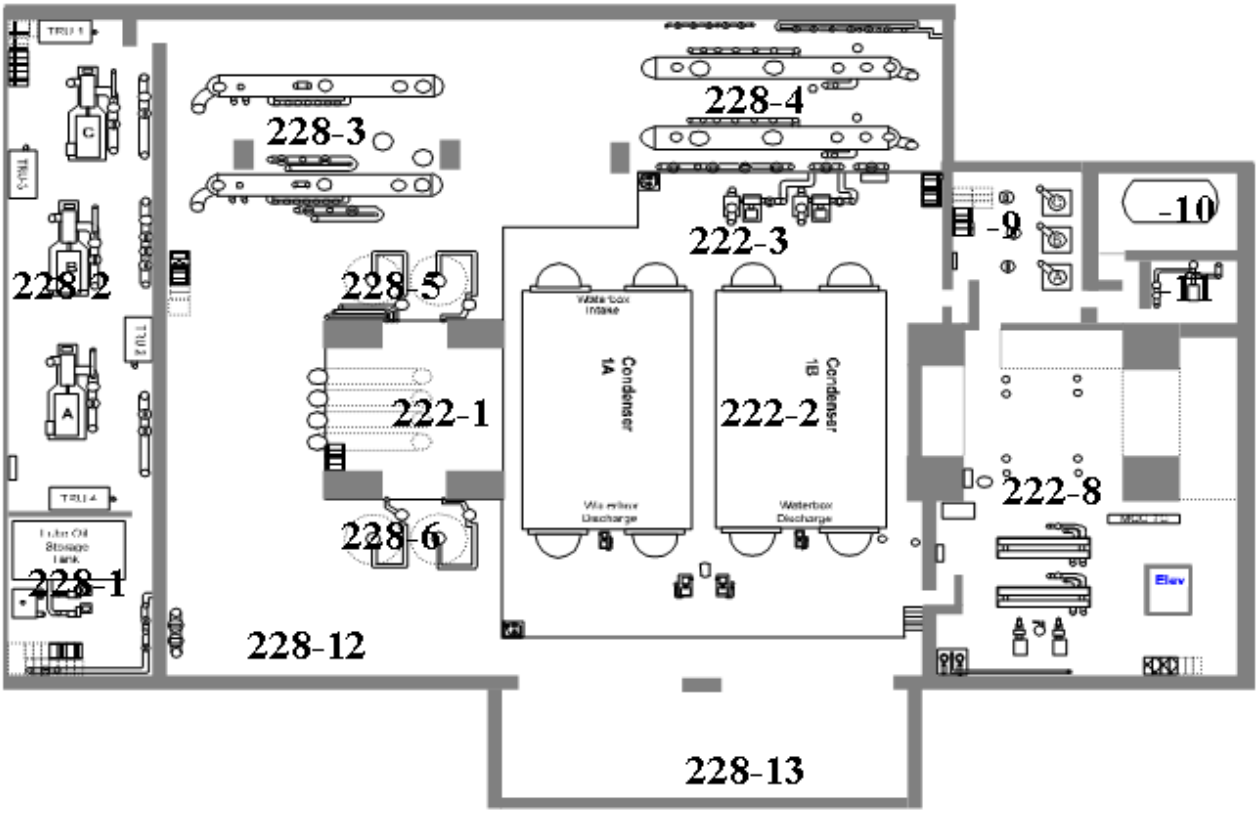
APPENDIX G

STACK



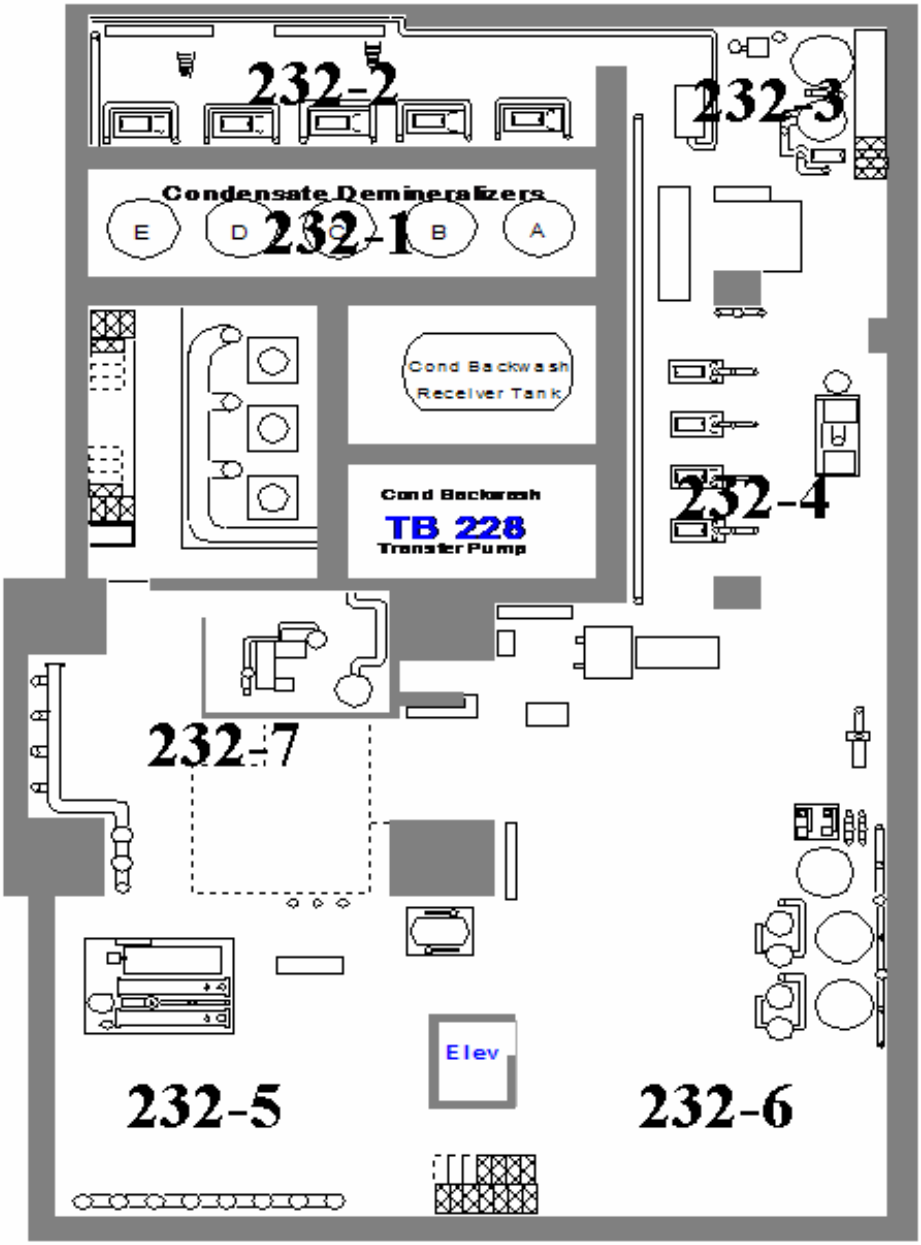
APPENDIX G

TURBINE BUILDING



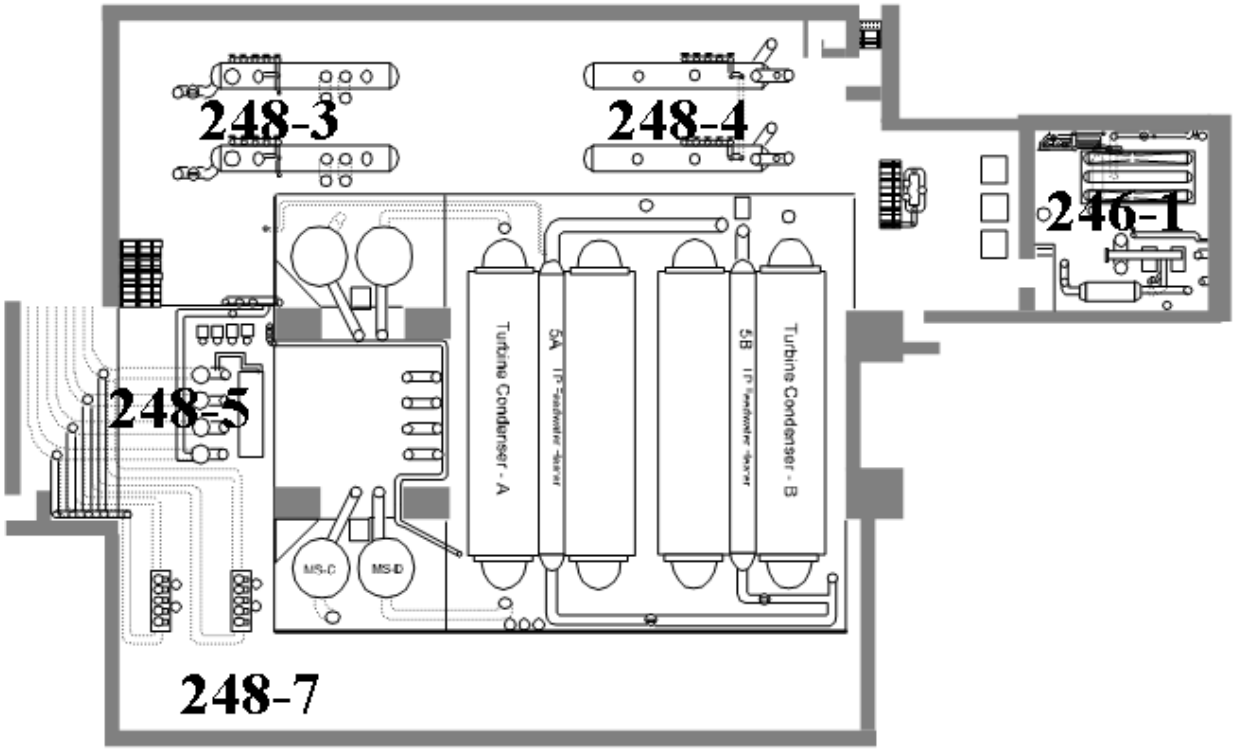
APPENDIX G

TURBINE BUILDING



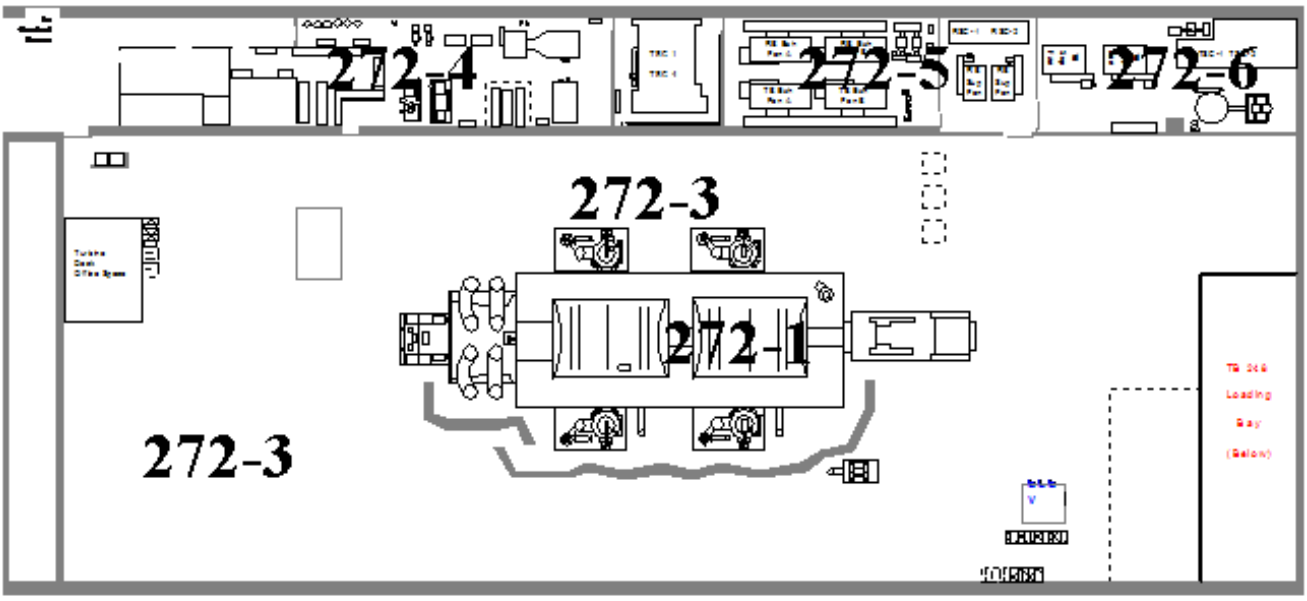
APPENDIX G
(continued)

TURBINE BUILDING



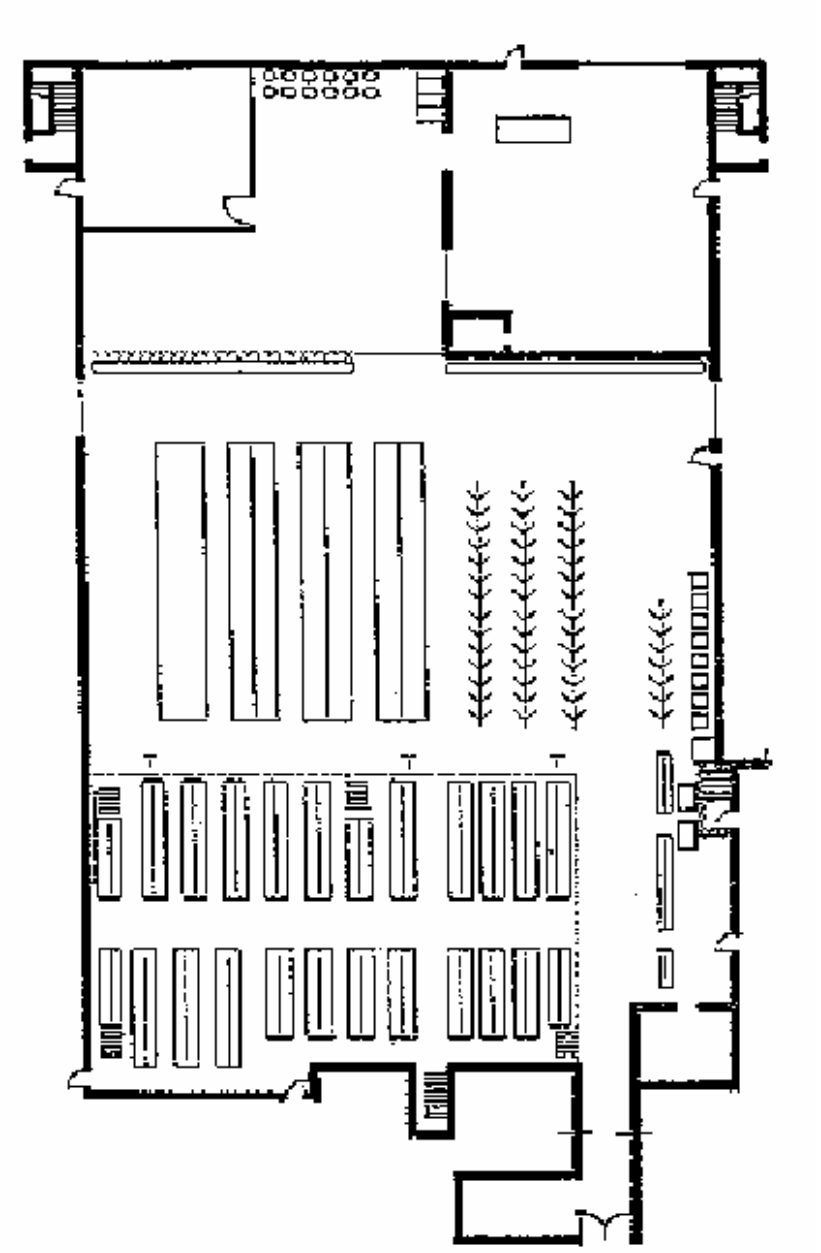
APPENDIX G

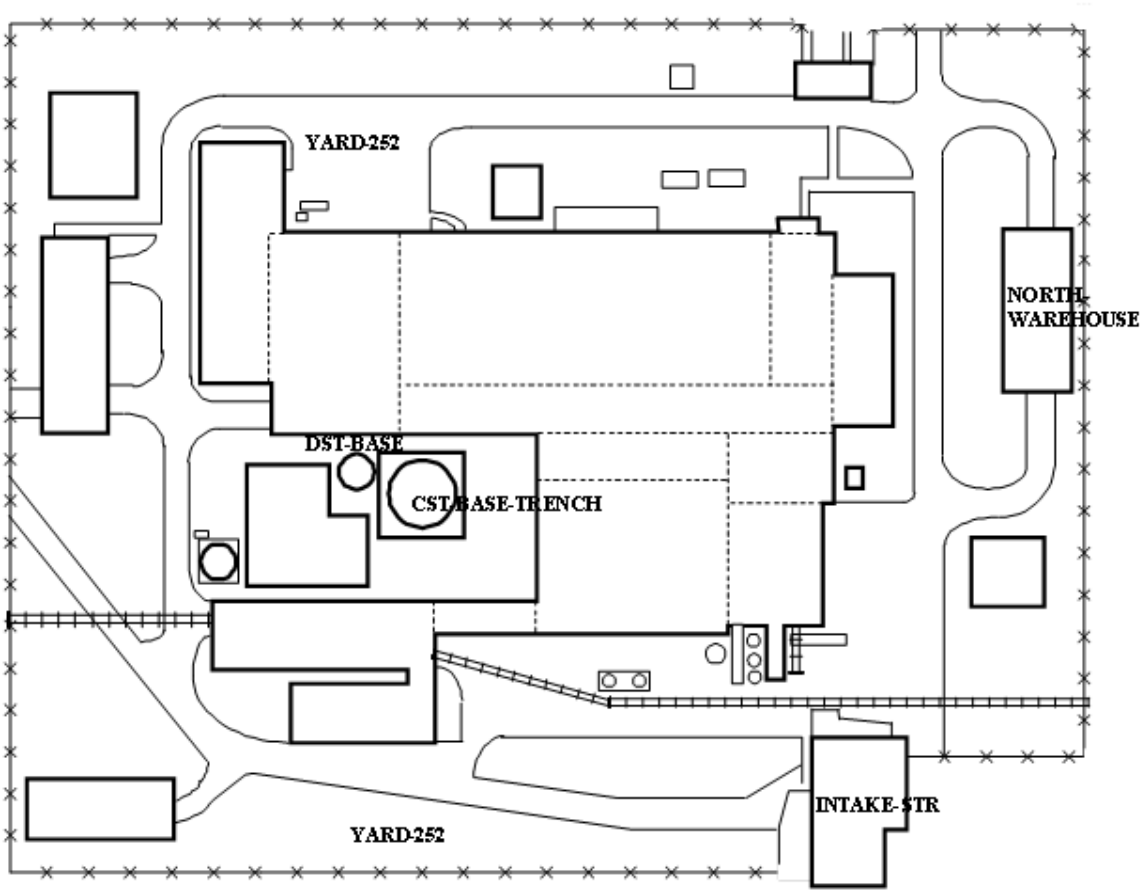
TURBINE BUILDING



APPENDIX G

NEW WAREHOUSE



APPENDIX G

YARD AREA